H.264 Multiplex 8CH LCD DVR
Support mobile phone/PDA
Support mouse

Owner's Manual

V1.0

CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER.
NO USER SERVICEABLE PARTS INSIDE.
PLEASE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

NOTE: This equipment has been tested and found to comply with the limits for a Class "A" digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the users will be required to correct the interference at their own expense.

FCC Caution: To assure continued compliance, use only shielded interface cables when connecting to computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This Class A digital apparatus meets all the requirements of the Canadian Interference Causing Equipment Regulations.

LIMITATION OF LIABILITY

- THIS PUBLICATION IS PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTIBILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY’S RIGHT.

- THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT(S).

DISCLAIMER OF WARRANTY

IN NO EVENT SHALL THE SUPPLIER BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO THE FOLLOWINGS:

- ANY DAMAGE OR LOSS, INCLUDING BUT WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED WITH THE DEVICES OF THE THIRD PARTY;
- ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA’S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE.

PRECAUTIONS

- **Please refer all work related to the installation of this product to qualified service personnel or system installers.**
- **Do not operate the appliance beyond its specified temperature, humidity or power source ratings.**
  Use the appliance at temperatures between **0°C ~ +45°C** (**32°F ~ 113°F**) and humidity below **85%**.
  The input power source for this appliance is between **90 ~ 264 VAC**, **47 ~ 63 Hz**.
  Performance and lifetime of hard disk drives are easily affected by heat (used at high temperature). It is recommended to use this appliance at temperature between **+20°C ~ +30°C** (**68°F ~ 86°F**)
- **Handle the hard disk drives with care.**
  It is possible to damage them if they are moved while their motors are still running. Do not move them just after turning the power on or off (for around 30 seconds).
  Protect the hard disk drives from static electricity.
  Do not stack them or keep them upright.
  Do not use an electric screwdriver to fix them.
- Clean only with dry cloth.
- Do not block any ventilation openings.
- Do not use the appliance near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.
- Protect the power cord from being stepped on or pinched particularly at plugs, convenient receptacles and the points where they exit from the apparatus.
- Do not drop metallic parts through slots. This could permanently damage the appliance. Turn the power off immediately and contact qualified service personnel for service.
- Handle the appliance with care. Do not strike or shake, as this may damage the appliance.
- Do not expose the appliance to water or moisture, nor try to operate it in wet areas. Do take immediate action if the appliance becomes wet. Turn the power off and refer servicing to qualified service personnel. Moisture may damage the appliance and also cause electric shock.
- Do not use strong or abrasive detergents when cleaning the appliance body. When the dirt is hard to remove, use a mild detergent and wipe gently.
- Do not overload outlets and extension cords as this may result in a risk of fire or electric shock.
- Please make a note of your settings and save them. This will help when you are required to change the system configuration, or when unexpected failure or trouble occurs.
- Distributing, copying, disassembling, reverse compiling, reverse engineering, and also exporting in violation of export laws of the software provided with this product, is expressly prohibited.

Table of Content

1. Product Overview …… 1
   1.1 Specifications……... 1
2. Panels and Remote Controller…… 2
   2.1 Top panel…….. 2
   2.2 Front Panel……..... 2
   2.3 Back Panel …… 3
   2.4 Remote Controller…….. 5
3. Hardware Installation…… 6
   3.1 Basic Connections…….. 6
   3.2 Hard Disk Install…….. 7
   3.3 PTZ Control Connections…….. 7
4. Power-on DVR and Quick Start…….. 8
   4.1 Live view screen…… 8
   4.2 Tools Bar…….. 9
   4.3 Format HDD…… 10
   4.4 Video Record……... 11
   4.5 Video Playback…… 13
   4.6 Video Backup…….. 14
   4.7 Play backup video on PC…….. 16
   4.8 PTZ Control…… 16
5. DVR Setting……... 18
   5.1 Menu Tree & Operate…… 18
   5.2 System Setting…… 20
      5.2.1 Language…… 20
      5.2.2 Video Standard…….. 20
      5.2.3 Record Resolution…… 20
      5.2.4 VGA Setting…… 20
      5.2.5 Time Format……... 20
      5.2.6 Time Setting……... 20
      5.2.7 Password Setting…….. 21
      5.2.8 System- Advanced Setting…….. 21
   5.3 Record Setting…… 21
      5.3.1 Video Channel…… 22
      5.3.2 Record Schedule……... 22
      5.3.3 Video Quality…….. 22
      5.3.4 Record Frame Rate…….. 23
      5.3.5 Record Source……... 23
      5.3.6 OSD Setting……... 23
      5.3.7 Record- Advanced Setting……... 23
   5.4 Camera Setting……... 24
      5.4.1 Camera Channel……... 24
      5.4.2 PTZ Protocol…….. 24
      5.4.3 PTZ Baud Rate…… 24

5.4.4 PTZ ID…… 24
5.4.5 Color Setting…… 24
5.4.6 Motion Detection & Region…… 24
5.4.7 Mosaic…… 25
5.4.8 Camera- Advanced Setting…… 25
5.5 Net Setting…… 26
5.5.1 Network…… 26
5.5.2 Http Port…… 26
5.5.3 Command Port…… 26
5.5.4 Media Port…… 26
5.5.5 Net- Second Page [PPPoE]…… 27
5.5.6 Net- Third Page [E-Mail]…… 28
5.6 Alarm Input/output Setting…… 29
5.6.1 Alarm Input Channel…… 29
5.6.2 Alarm Input Type…… 29
5.6.3 Event Handling…… 30
5.6.4 Alarm-Advanced (alarm schedule)…… 30
5.7 Maintenance…… 31
5.7.1 Log View…… 31
5.7.2 Upgrade…… 32
5.7.3 HDD Manage…… 32
5.7.4 HDD Capacity…… 33
5.7.5 Hardware Version…… 33
5.7.6 Software Version…… 33
5.7.7 Software Release Date…… 33
5.8 Save Setting…… 33
5.8.1 Save & Exit…… 33
5.8.2 Exit…… 33
5.8.3 Restore defaults…… 33
5.8.4 Logout…… 33
6. Web Browser Operation (IE Browser only)…… 34
6.1 Enable Download Un-singed ActiveX Control…… 34
6.2 Web Browser Main Screen…… 34
6.3 Alarm Notification…… 36
6.4 Device Parameters Settings…… 37
6.5 Video Files Playback & Download…… 41
6.5.1 Video Files Playback…… 41
6.5.2 Download Video Files…… 42
6.5.3 Device Log…… 42
7. Mobile Phone Support…… 43
8. Appendix…… 46
Appendix A – HDD Capacity Estimater…… 46
Appendix B – Compatible HDD List…… 46
Appendix C – Compatible USB portable DVD Burner List…… 47

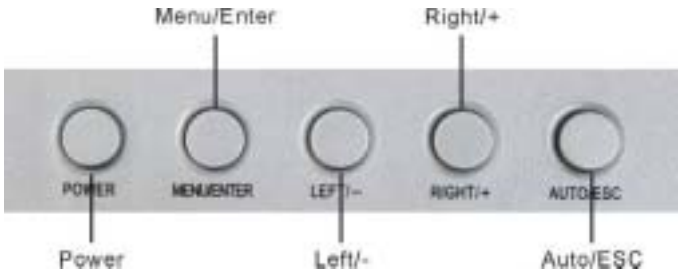
1. Product Overview

1.1 Specifications

Item	Specifications
Video Format	PAL/NSTC
Video Format	H.264 Baseline Compression
Video Input	BNC 8 Input / 1 Output
Audio Format	G.726 8Kx16bit ADPCM Mono
Audio Input	RCA 8 Input / 1 Output
Alarm Type	Motion detection, Sensor Input, Relay Output , Video Lost
Sensor In/Out	4CH Input / 1CH Output
Display Frame Rate	Each Channel PAL：25 FPS, NTSC：30 FPS
Playback Resolution	PAL：CIF(352×288) NTSC：CIF(352×240)
Record Frame Rate	PAL：200 FPS @ CIF NTSC：240 FPS @ CIF
Record Method	Power-on Auto Record, Schedule Record (Manual Record, Motion Detection, Sensor Trigger) Support Privacy Mask (Mosaic)
HDD Interface	SATA Interface support 1000GB,
Network Protocol	TCPIP/ DHCP/DNNS/PPPoE/E-Mail
Network Function	IE Browser Live Monitor, Configuration, Download Video, Playback, and Mobile Phone Surveillance
USB 2.0 Interface	Mouse / Potable Mobile HDD/ Flash Drive/ DVD Burner/ Firmware Upgrade
Playback Method	Normal Play, Fast Forward, Reward, Single Step
Network Interface	RJ45 10M/ 100M Ethernet Auto Detect
PTZ Protocol	PELCO-P ,PELCO-D, Samsung, Panasonic
Video Backup	MP4 or H.264 Raw
Power Adapter	DC 12V Adapter / 6A
Power Consumption	10~15W
Temperature	10℃~+40℃
Humidity	10%~90% RH
Dimensions	464(W) x 340 (D) x 65 (H) mm (Without Bracket)

2. Panels and Remote Controller

2.1 Top panel



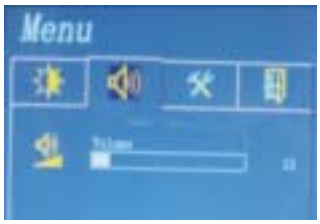
Function of the top panel

1. **POWER** ———Turn on / off the LCD monitor. When press the key over 3 seconds, it will turn off. If you push the key just one time, it will display the image from VGA Input Connector.
2. **MENU/ENTER** — Press the key to configure of the LCD monitor
3. **RIGHT/+** ———Move the prompt of the parameters on the screen or increase value.
4. **LEFT/-** ———Move the prompt of the parameters on the screen or reduce value.
5. **AUTO/ESC** ——— Press the key to exit the configuration of the LCD monitor.

Menu Interface

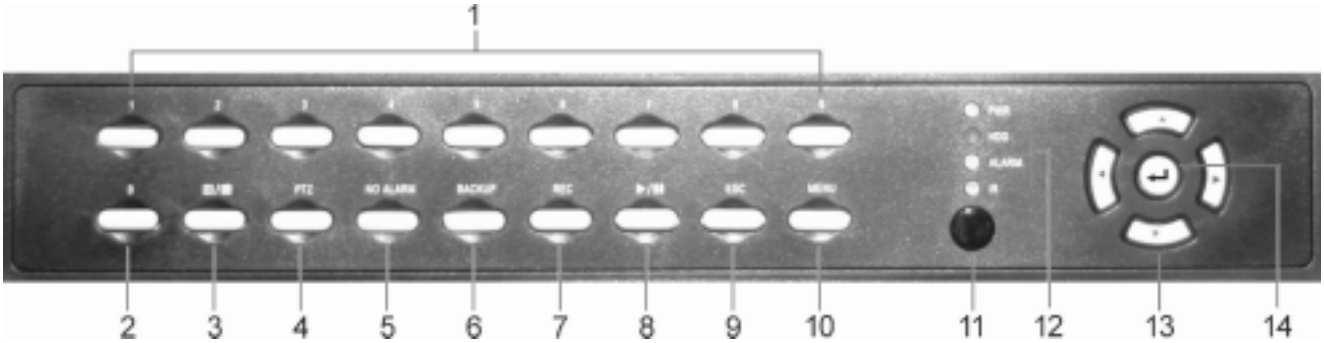
If you need to adjust the parameters of the LCD monitor, you can press "MENU/ENTER". The menu will be displayed on the LCD screen. Then press "LEFT/-" or "RIGHT/+" to move the cursor leftwards or rightwards to select the option that user wants to modify. Then, press "LEFT/-" or "RIGHT/+" to increase value or reduce value. After finished the setting, press the "AUTO/ESC" to exit.

BRIGHTNESS: 0~ 100
CONTRAST: 0~ 100
SATURATION: 0~100
VOLUME: 0~100
COLOR TEMP: 5000K/6500K/7500K



OSD LANGUAGE:
ENGLISH/CHINESE
EXIT
OSD TIME: display time
FACTORY RESET: YES/NO

2.2 Front Panel



1. **Number 1~9 Buttons:** Press these buttons for camera selection in most of the circumstances. They can also be used to enter number in the way similar to most of the mobile phones.
2. **Number 0 Button:** Press this button to enter number “0”.
3. To switch screen display mode
4. **PTZ:** Press this button to enter/exit PTZ control if the focus camera is a PTZ camera.
5. **NO ALARM:** alarm reset button
6. **BACKUP:** Open video search and backup menu.
7. **REC:** manual recording
8. **PLAY/PAUSE:** Press this button to play the recorded images, or pause the playback.
9. **ESC:** Press this button to display the main menu or escape to the upper level display
10. **MENU:** Press the button to enter the main menu.
11. **Remote IR**: IR window which receives the remote controller signal.
12. **LEDs:** Indicators for POWER, HDD access indication.
13. **Up Button (▲):**

    Press this button to move the cursor or focus window in most circumstances. In PTZ control, press this button to tilt up the camera. In text editing mode, this button is used as “backspace” key.

    Down Button (▼):

    Press this button to move the cursor or focus window in most circumstances. In PTZ control, press this button to tilt down the camera. In text editing mode, this button is used as “del” key. In playback mode, press this button for single step.

    Left Buttons (◄):

    In PTZ control, press these buttons to pan the camera. In playback mode, press these buttons for fast backward. In the other screens, press these buttons to move the cursor or focus window.

    Right Buttons (►):

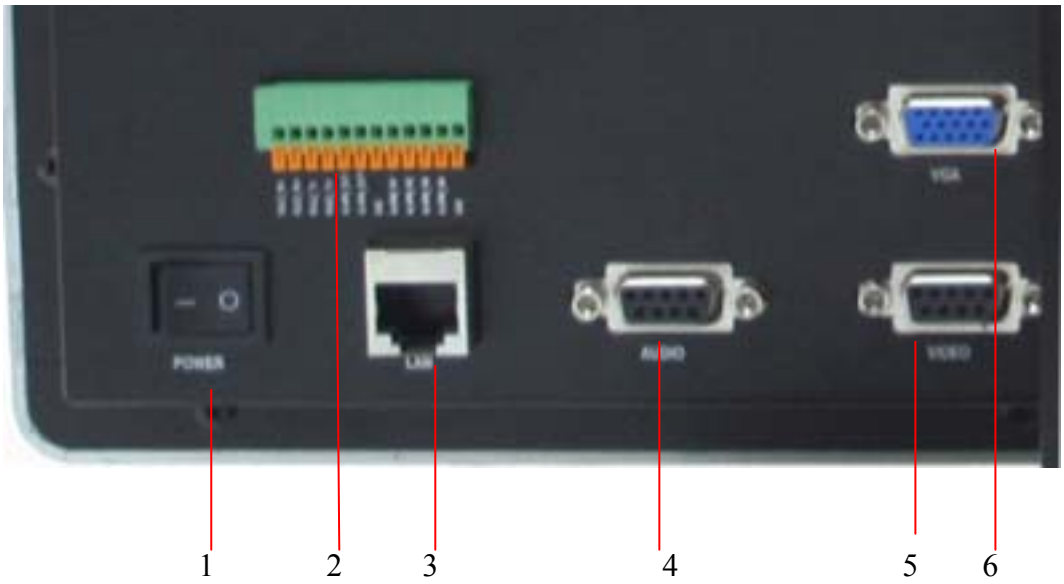
    In PTZ control, press these buttons to pan the camera. In playback mode, press these buttons for fast forward. In the other screens, press these buttons to move the cursor or focus window.
14. **ENTER**: confirm or enter button.

2.3 Back Panel

1. HDD box

2. Power jack

3. USB port for mouse connection or to backup device.



1. Power Switch (POWER)

Turn the power of this unit on/off.

2. RS-485 Connector/ Alarm Output Connectors/ Alarm Input Connectors

Connect this connector to RS-485 compatible PTZ camera(s). Please refer to the manuals come with the RS-485 compatible devices for the correct settings.

(ALARM OUT 1-2)

Connect these connectors to 1 Normally Closed (NC) alarm outputs (1) and 1 Normally Open (NO) alarm outputs (2).

(ALARM IN 1-8)

Connect these connectors to external devices such as sensors or door switches.

3. Ethernet Connector

Connect this unit to a 10/100Base-T Ethernet network through this port.

4. Audio Input /output Connectors

These RCA connectors accept line-in audio signals supplied from external devices such as microphone amplifiers. These connectors supply line-out audio signals to external devices such as speakers. Recorded audio will be supplied from AUDIO OUT during playback.

5. Video Input Connectors (1-8)

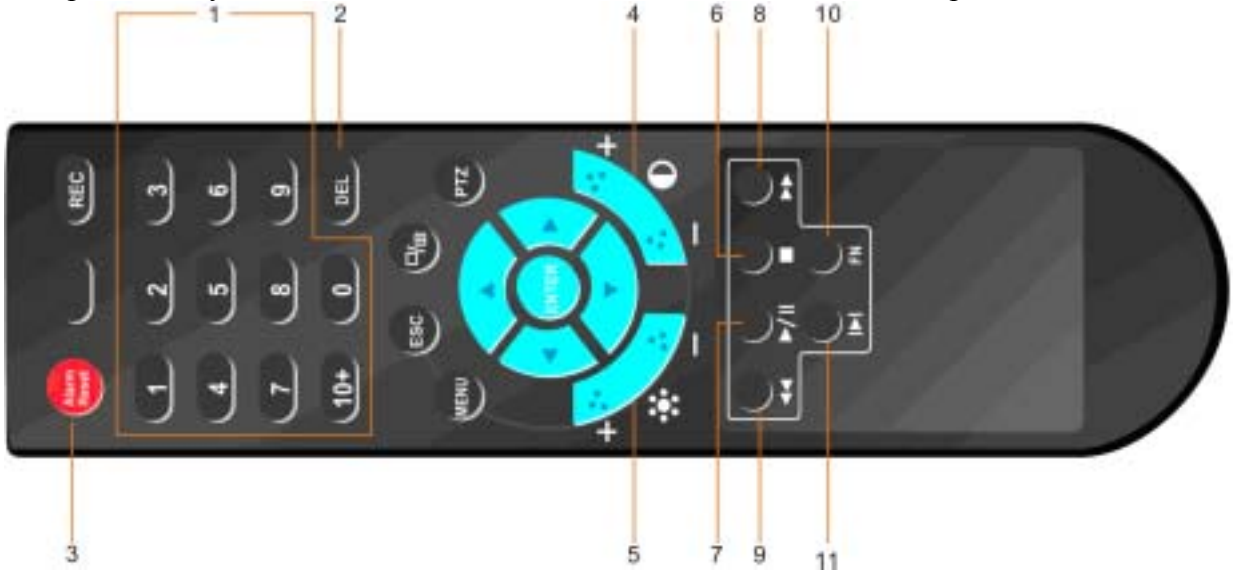
Connect system cameras to these BNC connectors.

6. VGA Input Connector

Connect PC VGA output port to the VGA Input connector so as to be a LCD monitor. Moreover, you must push the key of "POWER" on the top of monitor just one time.

2.4 Remote Controller

The remote controller is an accessory to ease the user's operations. You can do all the operations by the remote controller instead of the buttons on the front panel.



1. **Alpha-numeric Buttons (1-9, 0, 10+)**
   Press these buttons for camera selection in most circumstances. These buttons can also be used to enter text and number
2. **DEL Button (DEL)**
   In text editing mode, this button is used as "del" key.
3. **Alarm Reset Button**
   Press this button to cancel alarm activation; click this button will pop a message to show the present alarm information.
4. **Contrast Button**
   Adjust image contrast up(+)/down(-).
5. **Brightness Button**
   Adjust image brightness up(+)/down(-).
6. **Stop Button (■)**
   Press this button to stop the playback.
7. **Play/Pause Button (▶/Ⅱ)**
   Press this button to play the recorded images, or pause the playback.
8. **Fast Forward Button (▶▶)**
   Press this button for fast forward playback.
9. **Fast Backward Button (◀◀)**
   Press this button for fast backward playback.
10. **Function Key(FN)**
    Reserved
11. **Single Step Button (▶|)**
    Press this button to play the recorded images frame by frame.
12. **The Other Buttons**
    Each of the other buttons corresponds to one of those buttons on the front panel. Please refer to the descriptions in Section 2.1. Front Panel

3. Hardware Installation

3.1 Basic Connections

- **Cameras**
  Connect the camera output to video input connector in real panel of the DVR.
  The video input interface is standard BNC connector, 1Vp-p, 75 Ω.

- **Audio Connector**
  The audio input interface is standard RCA socket, 2Vp-p, 600 Ω.
  The **audio input resistance is a little bit high; please use active sound collection device or active microphone**. And the audio signal cable should keep away from the interference of strong electromagnetism and electric field.

- **Monitor**
  Connect the main output connector to a monitor. Use BNC-to-RCA connector to work with Audio/Video RCA cable.

- **Power**
  Use adapter come along with DVR, plug $12V_{DC}$ output connector into the power socket.

- **Alarm Input/output**
  Please refer to Chapter 5.6.2.

- **Ethernet**
  Connect the Ethernet connector to a standard twisted-pair Ethernet cable for remote access via LAN or internet

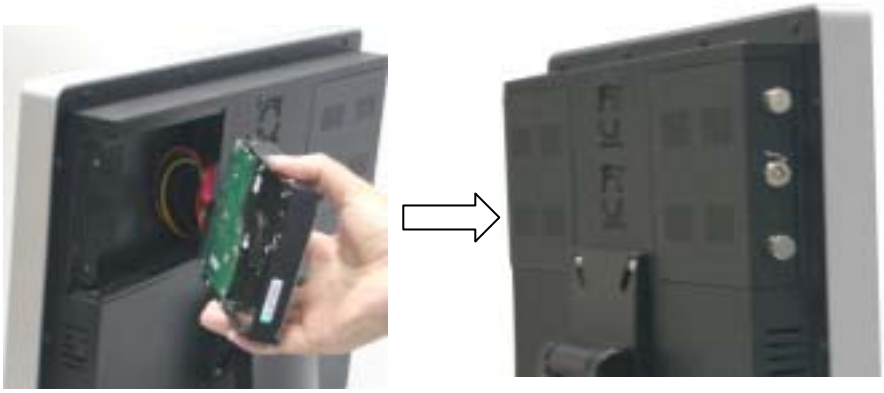
- **USB 2.0**
  Support Mouse, USB Flash Drive, USB portable HDD, USB portable DVD Burner.
  Note: Only support FAT32 file system.

3.2 Hard Disk Install

HDD must be formatted by DVR system before it can be used to record.
PS: Do not format HDD in PC.
Please refer to Section 4.3 Format HDD to format the HDD.

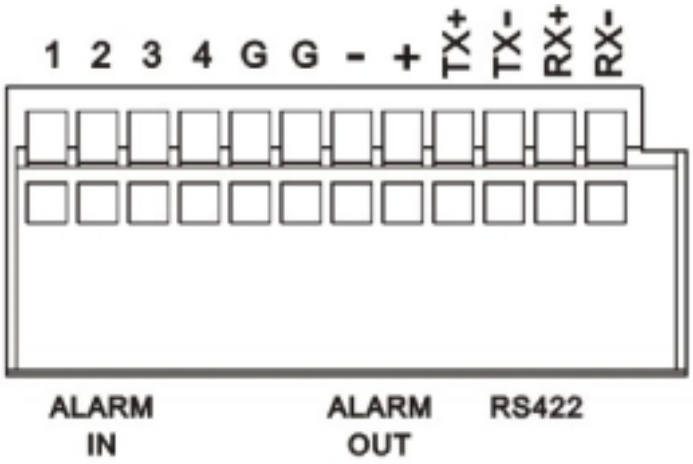
Make sure to install one or two hard disks (Max. storage size 1TGB) inside the DVR. The steps are as below:

1. Power off the device.
2. Pull out the HD racks on the both sides of the monitor and put the HD (3.5 ") into the rack and fix it.
3. Connect the HD and the signal/power cable of the device.
4. Insert the HD rack into the device and fix it.



3.3 PTZ Control Connections

Connect the PTZ control interface to RS422 T_X+ and T_X- interfaces of rear panel.



Please refer to PTZ setting section for 5.4.2 ~5.4.4 PTZ protocols, baud rates and IDs

4. Power-on DVR and Quick Start

Power-on the DVR and wait for system program loading. The DVR will buzz and “NO Hard Disk” appears when no hard disk installed in DVR.

First window will request to select user account and password to operate DVR system.

Default password of Admin is [888888] User is [666666]

Status Bar

Tools Bar

DVR system status bar at the bottom of the screen. Right-click mouse key or press [Enter] at front panel will open [Tools Bar] for system setting and operating.

4.1 Live view screen

- **Single Channel display**

  When in 4/9 splits view mode, the window with highlight **green border** is the current selected one. User can use mouse or press [Direction] buttons to switch to another channel. If the audio output device is connected, the audio can also be monitor together with video. User can select to display a single particular channel by pressing the corresponding [Numbers] buttons 1~8.

  When in single split view mode, user can enter into 4/9 splits view mode by pressing button directly, or reverse.

- **Channel Status Display**

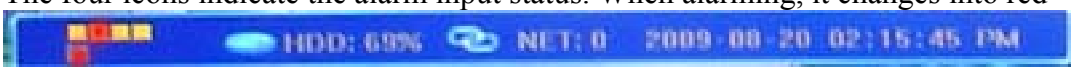
  Indication of “motion detection” / “common recording” / “alarm recording” will be displayed on the right upper corner of screen. The details are as follows:

  Indicates “motion detection”
  Blue indicates “common recording”
  Green indicates “motion detection triggered recording”
  Red indicates “alarm triggered recording”
  Grey indicates “manual recording”

- **Peripheral alarm input / alarm output display**

  Indication will be displayed on system status bar:

The four icons indicate the alarm input status. When alarming, it changes into red



The last icon indicates alarm output. When alarming outputs, it changes into red color.

4.2 Tools Bar

Right click mouse or press [Enter] button in preview mode, the Tool Bar shown as below will appear:

: Hide the tool bar.

: System configuration

: Manual record

: Search, playback and backup record files

: PTZ operation

: Cancel alarm notification. Click this button will pop a message to show the present alarm information.

.

, , : To switch screen display mode.
“Single camera” → “Quad 4 camera” →”9 camera”

: To adjust the screen, 8 pixels per unit can be adjusted.

: To reduce or increase screen in vertical direction.

: To reduce or increase screen in horizontal direction.

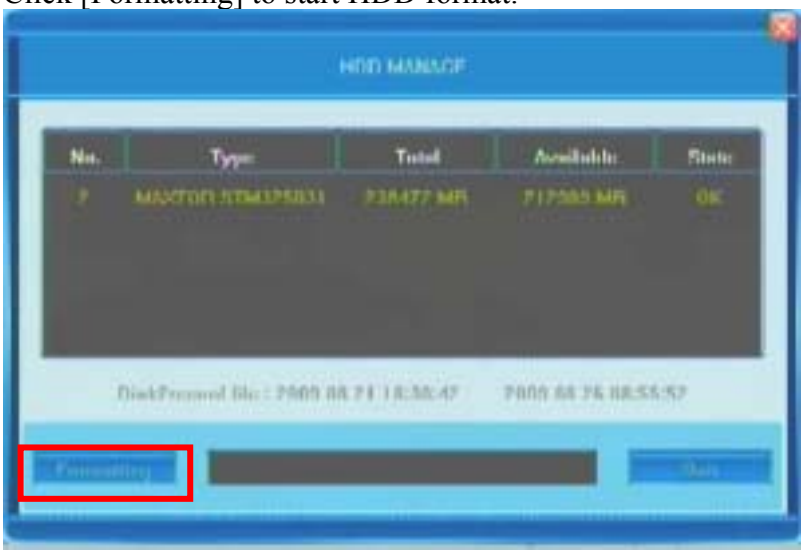
: To move the screen up, down, left, right

: To zoom out the screen to largest and show in central.

4.3 Format HDD

Login DVR system as [Admin] account.
Select <Tool Bar> → <Setting> → <Maintenance> → <HDD Manage> item.
Click〖>>〗to open HDD Mange window.

HDD information will display on the windows if DVR detection HDD correctly. Click [Formatting] to start HDD format.



4.4 Video Record

There are two methods to precede record in DVR, **manual record** and **schedule record**. **The priority of manual record is higher than schedule.** If the record schedule is conflict with manual record, the manual record will be processed firstly until the manual record being canceled. Record types include “common recording” / “alarm triggered recording” / “motion detection triggered recording” / “alarm & motion detection triggered recording”.

- Blue indicates “common recording”
- Green indicates “motion detection triggered recording”
- Red indicates “alarm triggered recording”
- Grey indicates “manual recording”

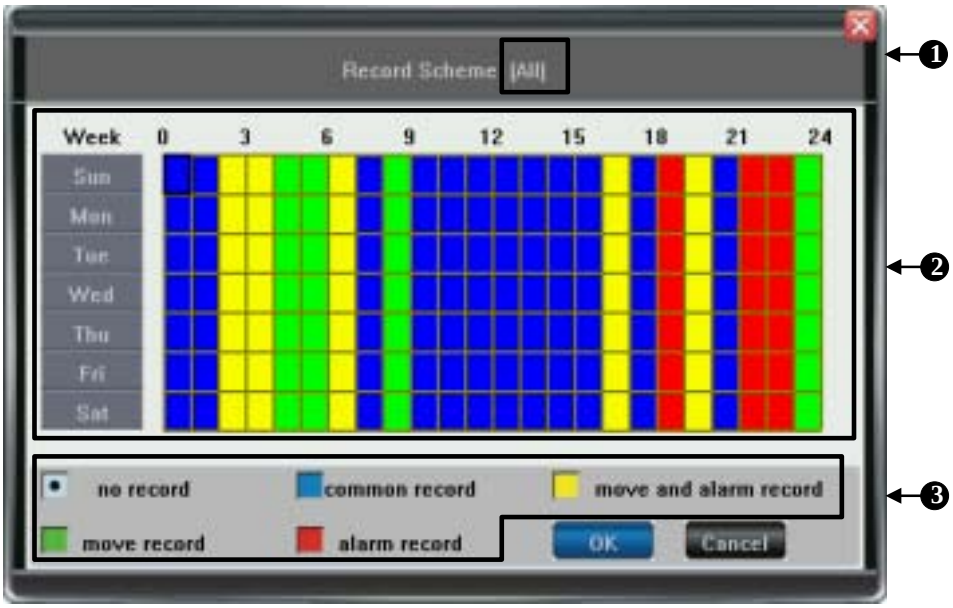
◆ Manual Record

Please select <Tool Bar>→<Manual Record> to let the specific channel record or not. Press [●] button to start/stop recording manually.

The video recorded manually is named "common recording"

◆ Schedule Record

Please select <Tool Bar> → < Setting > → <Record> → < Record Schedule> to set. The setting screen is shown as the figure below:



①. The current recording channel number

②. The record schedule

③. Description of record type

System provides a recording option for 24 hours every day and Sunday through Saturday every week. Unit is hour. One grid indicates one hour.

Move highlight icon to a time grid using [Direction] buttons.

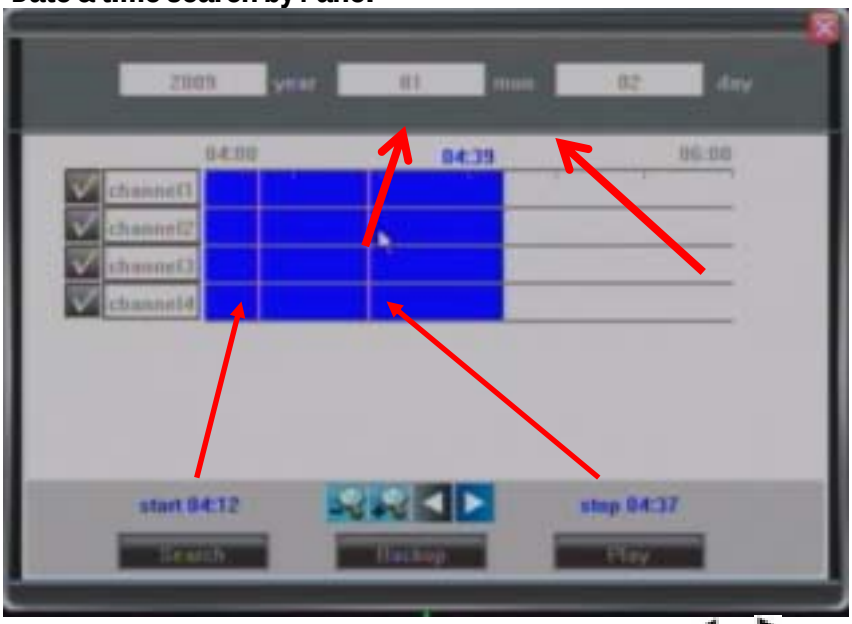
Specify the recording type by repeat pressing [Enter] button or double left clicking mouse. (The color of the grid will change relevantly).
Select OK to confirm settings. **The settings will take effect after being saved.**

When motion detection & alarm recording is selected, the motion detection sensitivity and area should be set ahead. Please refer to 5.4.6 Motion Detection Settings for details.
When alarm recording is selected, the alarm triggering settings should be set ahead. Please refer to 5.4.7 Event Handling for details.

4.5 Video Playback

Specify the date/time and channel number by selecting <Tool Bar>→<Record Search>. The searching results will be list on the screen in responding different colors so as to distinguish different record types.

◆ **Date & time search by Panel**



Move highlight icon to relevant selection box using [◀], [▶] buttons.
Move highlight icon to date/time selection box, modify time using [▲], [▼] buttons.
Move highlight icon to channel selection box, press [Enter] button to select it or cancel selection.
After setting time, channel number, move highlight icon to Search using [◀], [▶] buttons, and press [Enter] button to start searching recorded video.

Move highlight icon to , press [Enter] button to zoom in/zoom out timeline.

If the timeline is out of screen, please move highlight icon to and press [Enter] button to display the part out of screen.

After searching over, press [CH1~CH4] button will move to timeline for selecting start time and stop time. Press [◀], [▶] buttons to move timeline, press [Enter] to confirm selection. After all settings, move highlight icon to Play using [◀], [▶] buttons, and press [Enter] button to start playing.

◆ **Date & time search by Mouse**

User can mouse click to specify time. First left-click on timeline will mark [start time] and there will have a vertical line show up, second left-click will mark [stop time]. Mouse right-click will clear all marked time.

◆ **Playback Control**

: Fast backwards : Pause : Stop playing.

: Fast forward

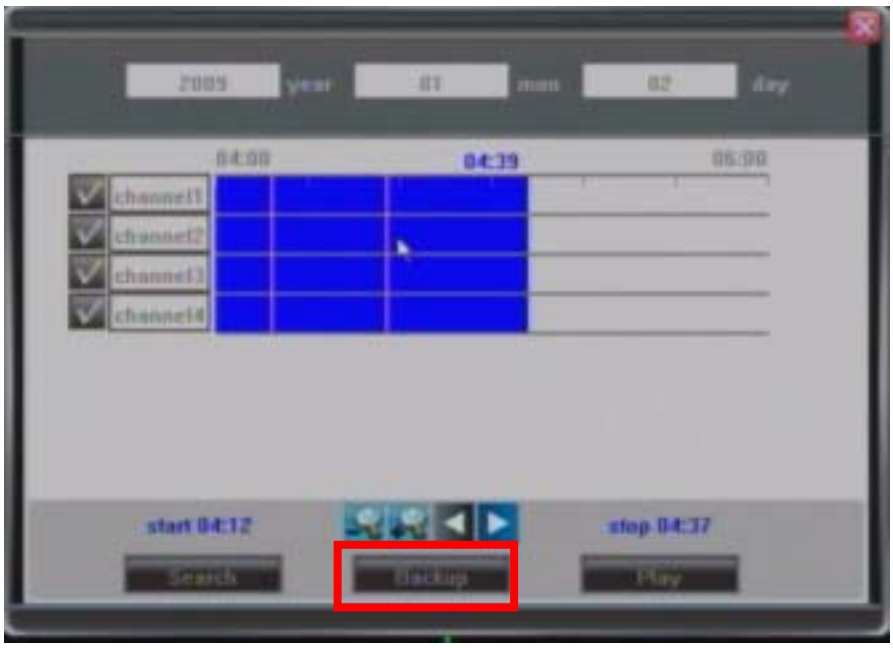
The available speeds are 1X, 8x 16x, 1/2X and 1/4X.

: Go to next frame.

: Click to switch from single camera to 4/9 camera.

4.6 Video Backup

Select <Tool Bar>→<Record Search> to search, backup and playback the specific record files you needs. Set the start time and stop time as describe in Section 4.4.



Click [Backup] to enter into the backup screen. System will detect all the backup devices available and display them. **Backup device can use USB flash drive, USB portable HDD and USB DVD Burner.**

Only support FAT32 file system for USB flash and HDD

Please select the suitable device and record type according to requirement first, and click [Backup] to start save audio/video. If there is no backup device found, a prompt tip will appear to remind users of connecting USB device well.

The types of record video include **H.264 Raw** and **MP4**.
When backup in MP4 types, the special video decoder components will also be backed up into USB & DVD Disc together automatically. After player plug is installed, the stored video files can be played only by **Windows Media Player.**

When backup in H.264 types, the stored video files can be played by H.264 player because it is a standard H.264 type file. For example, download H.264 player from http://www.videolan.org/vlc. Rename the stored video file from *.264 to *.h264. Then, it can be played by **VLC Media Player.**

4.7 Play backup video on PC

Before playback the backup video files, user must install decoder components for windows media player. User can find the compressed files "HY_MP4Player.rar" inside USB flash disk or CD/DVD. Uncompressed the HY_MP4Player.rar and execute "**InstallFilter.bat**" to install the decoder components.

After install the decoder components, user can use windows media player to playback the video.

4.8 PTZ Control

- **Local Operate**

Select single camera view and press <PTZ> button in front panel. Press direction key to move highlight and press <Enter> to set the action. Press "V" icon to open more menu.

◆ **Internet explorer web browser Operate**

NO.	Name	Description
①	Direction	Click the arrow icons to control direction of PTZ. Click the center icon to call sequence or run scanning. Please refer to the PTZ manual for details of PTZ scanning mode.
②	Speed	Set the turning speed of PTZ camera.
③	Zoom	Click to zoom in/zoom out (it is disabled for cameras with automatic focus).
④	Iris	Click to make the image brighter or darker (it is disabled for cameras with automatic iris adjustment).
⑤	Focus	Click to focus-in and focus-out (it is disabled for cameras with automatic focus).
⑥	Auxiliary	Open/close auxiliaries. Click to open and click to close. Different functions respond to different protocols. The auxiliaries include light, rain brash, and power etc. please refer to PTZ manual for details.
⑦	Preset	**Preset** is to set camera position, focus, zooming, and iris position, and then mark them in numbers for later calling. 1. Select the preset number you want to name as. 2. Position the camera as desired position including direction, focus, iris and zoom value. 3. Click on the set button. **call preset:** 1. Select the preset number you want to call. 2. Click on the go-to button. **Clear/reset preset:** Select the preset number you want to clear/reset. Click on the clear button.
⑧	Cruise	Cruise is a running route of camera that passes through multiple presets. **Set sequence:** 1. Select preset number you want to call. 2. Click on set button . 3. Repeat step 1 and 2 to add the other presets till finishing. 4. Click on run button . **Clear sequence**: Click on button to clear sequence.
⑨	Track	Track is a continuous running route of camera. **Set track**: 1. Click on to start setting. 2. Move camera as the track and pattern you want it to run. 3. Click on again to finish setting. 4. Click on to run track and click again to stop running. NOTE: Whether Track is supported or not is depending on the type of PTZ.

5. DVR Setting

5.1 Menu Tree & Operate

◆ General Operations

Press 【MENU】 button to enter into system setting screen.
Press 【●】 button to start/stop recording manually.
Press 【▶‖】 button to play record file.
Press【PTZ】 button to enter into PTZ control screen.

◆ Menu Selection

The highlight menu is the current active one. User can move highlight icon to the menu needed using 【▲】,【▼】,【◀】,【▶】 button, and press 【Enter】 button to confirm selection, or press 【ESC】 to return to upper menu.

◆ Sub Menu Selection

Selection box: User can move highlight icon to the selection box needed using 【◀】, 【▶】 button, and press 【Enter】 button to confirm selection. Multiple items are allowed to be selected together at once by left clicking mouse.

Sub menu list: User can move highlight icon to the sub menu needed using 【◀】,【▶】 button. Or roll mouse to select directly. Only one item can be selected here.

Edition box: when in edition box, user can type in numbers directly by pressing number buttons. Press 【DEL】 to delete the character before cursor and press 【Enter】 or 【ESC】 button to exit.
Sub screen button: Press 【>>】on screen to pop up sub screen. When in sub screen, select "Confirm" to save configuration and return to the upper menu. Press 【ESC】 or select "Cancel" to return to the upper menu without being saved.

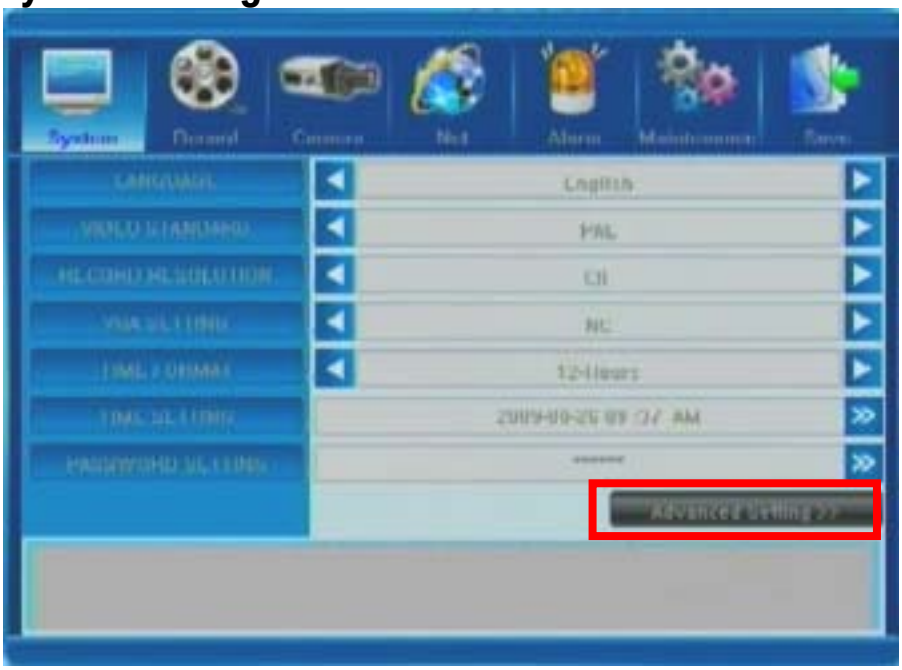
◆ Screen Operation

Use 【◀】,【▶】 to move highlight icon to any of the selection boxes. Press 【Enter】 button to switch to another selection status. Use 【▲】, 【▼】 to specify the sub menu value where sub menu selections exist.

◆ Save/Exit

User can click × button on the right upper corner, or single right click mouse, or press 【ESC】 button to enter into the Save & Exit screen. You can select exit directly or exit after being saved.

5.2 System Setting



5.2.1 Language

Change DVR menu text and OSD language.
**Take effect immediately **

5.2.2 Video Standard

Change DVR and camera video system, NTSC or PAL system.
**Take effect after being saved. **

5.2.3 Record Resolution

Only CIF Resolution Supported. NTSC: CIF(352×240) PAL: CIF (352×288)

5.2.4 VGA Setting

Switch different VGA output resolution.

5.2.5 Time Format

Switch time format between 12-Hours or 24-Hours.
**Take effect immediately **

5.2.6 Time Setting

Adjust date and time of DVR.
**Take effect immediately **

In order to avoid record files' time confusion, you'd better stop recording before modifying system time

5.2.7 Password Setting

Change password of “Admin” and “User” account.

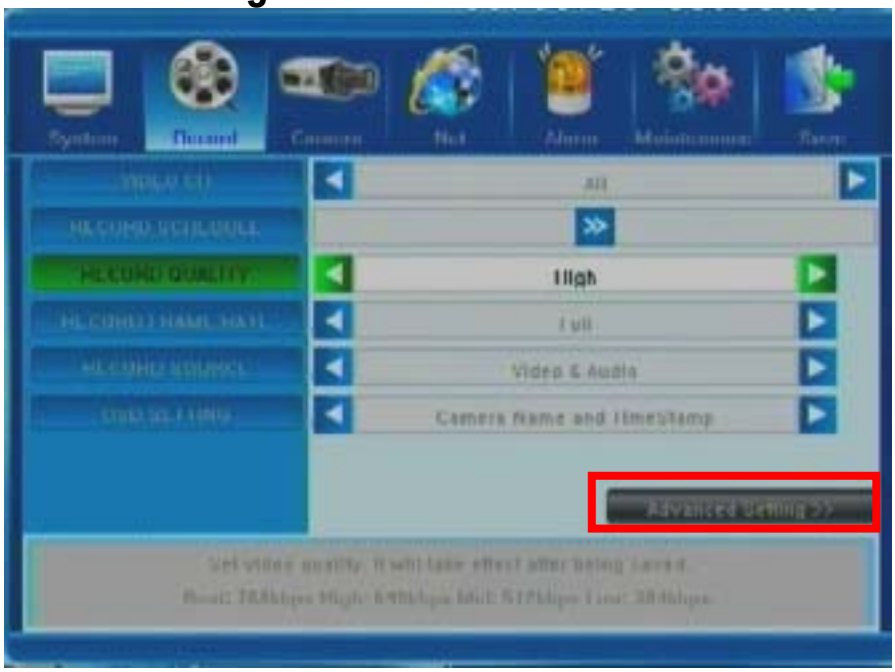
Default password of Admin is [888888] User is [666666]

5.2.8 System- Advanced Setting

- **Authority Manage**

Operation of DVR for “User” account can be defined by system. There are two conditions to apply restriction, **local operation** and **remote access**. By default the user account is not allow to operate DVR setting.

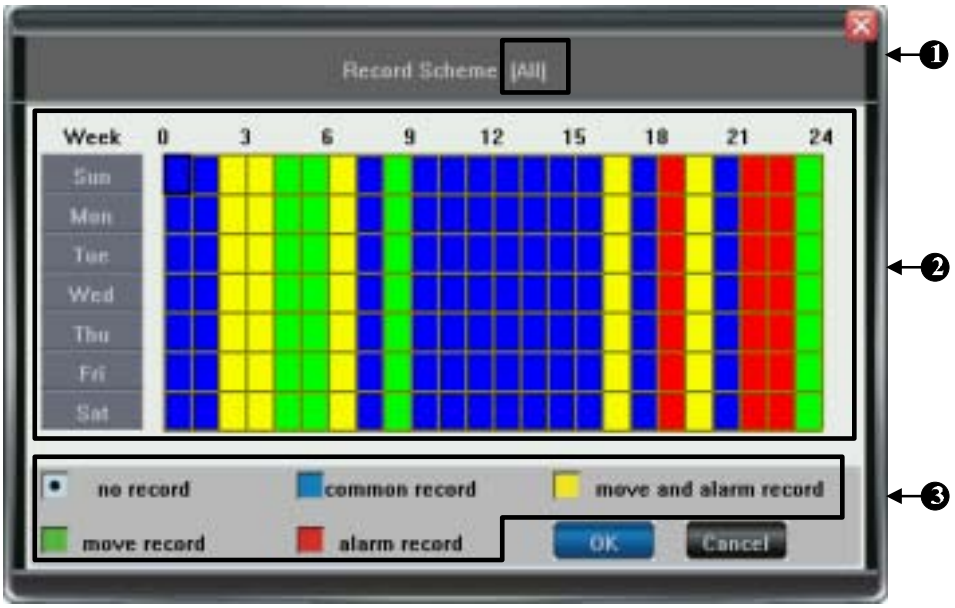
5.3 Record Setting



5.3.1 Video Channel

Select channel number for apply record setting. Select [ALL] for apply to all channels.

5.3.2 Record Schedule



①. The current recording channel number

②. The record schedule

③. Description of record type

System provides a recording option for 24 hours every day and Sunday through Saturday every week. Unit is hour. One grid indicates one hour.

Move highlight icon to a time grid using [Direction] buttons.
Specify the recording type by repeat pressing [Enter] button or double left clicking mouse. (The color of the grid will change relevantly).
Select OK to confirm settings. **The settings will take effect after being saved.**

When motion detection & alarm recording is selected, the motion detection sensitivity and area should be set ahead. Please refer to 5.4.6 Motion Detection Settings for details. When alarm recording is selected, the alarm triggering settings should be set ahead. Please refer to 5.4.7 Event Handling for details.

5.3.3 Video Quality

Select quality level for record audio/video. The pre-define selection from Best 768kbps →High 640kbps →Mid 512kbps →Low 384kbps or user define. User can manually input bit rate for recording. (Kbit/s)

5.3.4 Record Frame Rate

Select recording frame rate per second. The pre-define selection from Full (30/25fps) → 15 fps → 7fps → 3fps → 1 fps or user define.

5.3.5 Record Source

Two type selection of recording, Video with audio or Video only.

5.3.6 OSD Setting

Define OSD (On Screen Display) string. The options have as following

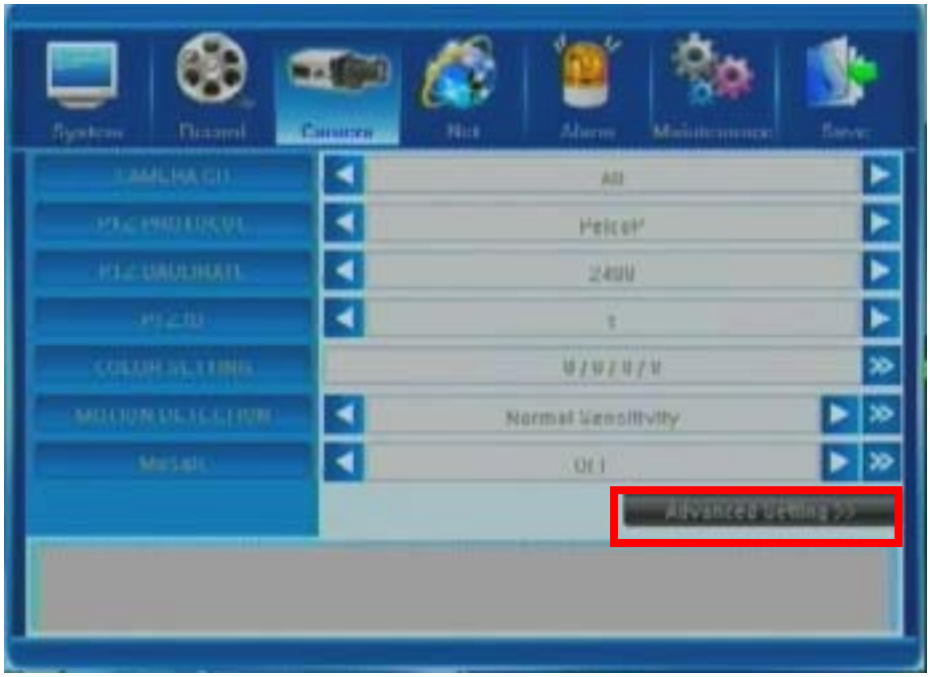
1) Camera's Name and Time Stamp
2) Camera Name
3) Time Stamp
4) None

5.3.7 Record- Advanced Setting

- **SUB CODE**

  By default, DVR use recording streaming for IE Browser viewer and mobile streaming. Enable sub code can customize the frame rate and bitrate for IE client viewer and mobile streaming in case of limited upload bandwidth.

5.4 Camera Setting



5.4.1 Camera Channel

Select camera channel for apply camera setting. Select [ALL] for apply to all channels.

5.4.2 PTZ Protocol

Select PTZ device protocol. Support Pelco-D, Pelco-P, Panasonic, Samsung.

5.4.3 PTZ Baud Rate

Select PTZ device baud rate. Support 1200, 2400, 4800, 9600.

5.4.4 PTZ ID

Select PTZ device ID from 1~100.

5.4.5 Color Setting

Adjust camera color attribute, by default the value is 8.

- Brightness: 1 ~ 16
- Contrast: 1 ~ 16
- Hue: 1 ~ 16
- Saturation: 1 ~ 16

5.4.6 Motion Detection & Region

- **Sensitivity of motion detection**
  There are three level sensitivity of motion detection.
  Highest →Normal → Low or Disable
- **Configure motion detection by region.**
  Press 【>>】 on screen to pop up sub windows for region setting.

There are totally 16 x 12 individual blocks for a camera view. Each block can be turn on or off by single mouse left-click.

5.4.7 Mosaic

Each camera can define multiple regions for privacy protection. Click 〖>>〗 open sub windows and use mouse define the privacy regions. Each privacy region will show only gray color in live view windows.

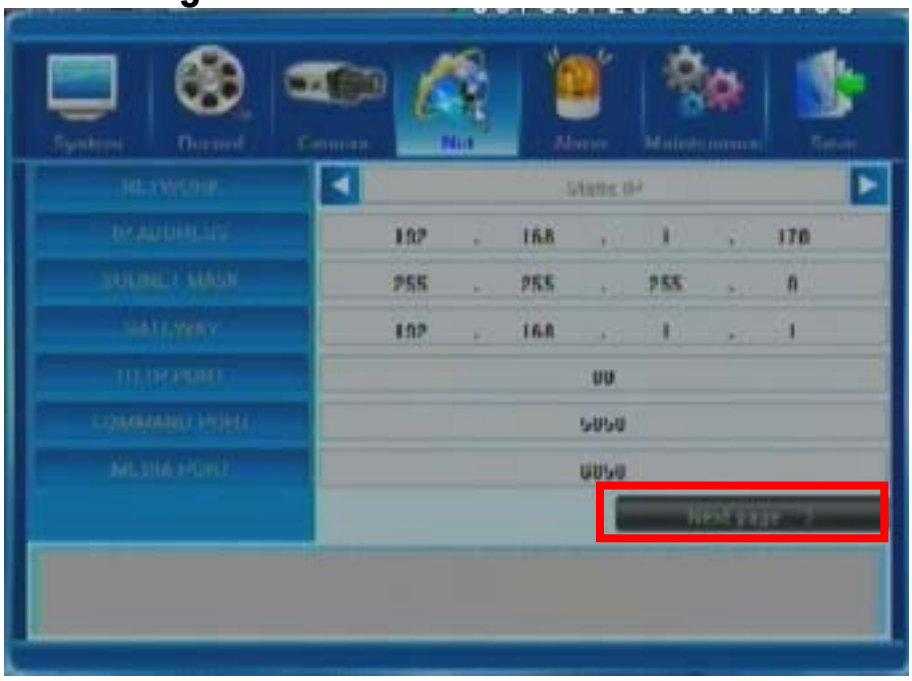
5.4.8 Camera- Advanced Setting

- **Motion Handling**
- **Video Lost handling**

User can pre-define correspond action while DVR handling the event such as motion detection, video list, alarm input trigger. Following is the action list,

- Record: Start record immediately
- Alarm Out: Set the Alarm output enable
- Buzzer: Set the Buzzer enable
- E-mail: Send E-mail with Snapshot picture

5.5 Net Setting



5.5.1 Network

DVR support two methods to acquire IP address,

- Automatic acquire IP address by DHCP client model.
- Manual assign IP address by Static IP model.

PPPoE for ADSL dial-up network are supported, please click Next Page.

5.5.2 Http Port

By default is port: 80, user can specify different port number.

5.5.3 Command Port

By default is port: 5050, user can specify different port number.

5.5.4 Media Port

By default is port: 6050, user can specify different port number.

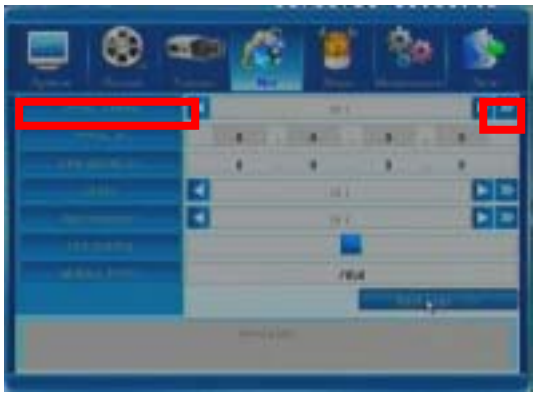
If DVR installed behind a Router to share a single public IP address. Be sure to configure the "Port Forwarding" or "Virtual Server" for those three network port and Mobile surveillance Port: 7050.

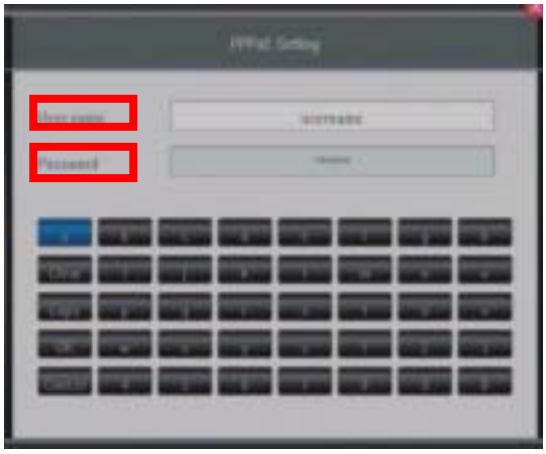
Http port: 80, Command port: 5050, Media port: 6050 and surveillance port: 7050 must open/allow to upload to WAN interface if DVR installed behind a Firewall server.

5.5.5 Net- Second Page [PPPoE]

◆ **PPPoE Setting**

Click 〖>>〗 to open sub window and input ADSL account and password from Internet Service Provider.





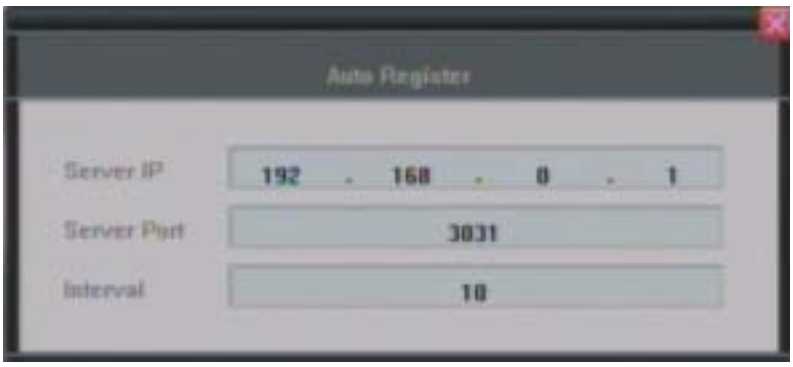
◆ **DDNS**

Click 〖>>〗 to open sub window and input DDNS account and password from DDNS Service Provider. User must apply DDNS service account at first.

www.sedvr.com
www.justlinux.com
www.hn.org
members.3322.org
www.EZ-IP.net
members.dhs.org
www.easydns.com
www.dyns.cx
www.zoneedit.com
members.dyndns.org
www.penguinpowered.com

◆ **Auto Register**

Select to activate Auto Register function, click to Auto Register interface, management host IP address, host port, register interval time is required to input



◆ **File Sharing**

Check to activate files sharing function, then able to visit video files in DVR HDD via network neighborhood. Use

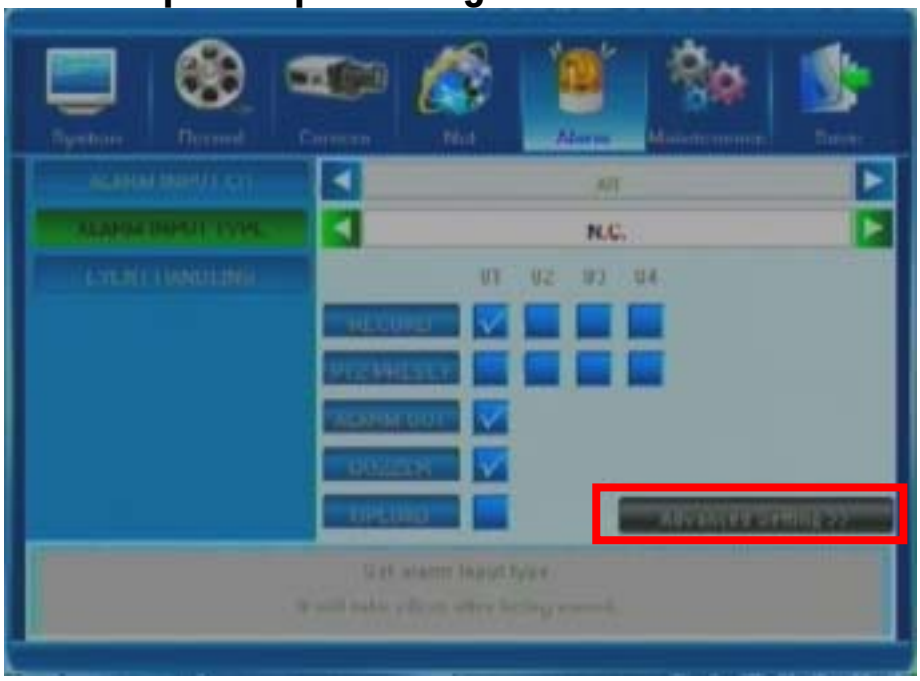
How to visit shared files:

Double click network neighborhood, input \\ IP address, such as \\192.168.10.220 , to enter the login page, type in the super authority "Admin" and password, the shared files can be accessible now, click into folder of "videoout" to check video files.

5.5.6 Net- Third Page [E-Mail]

User can add multiple e-mail address of recipients for alarm notification. Input standard SMTP mail server IP address. Please make sure you have user account and password in advance.

5.6 Alarm Input/output Setting



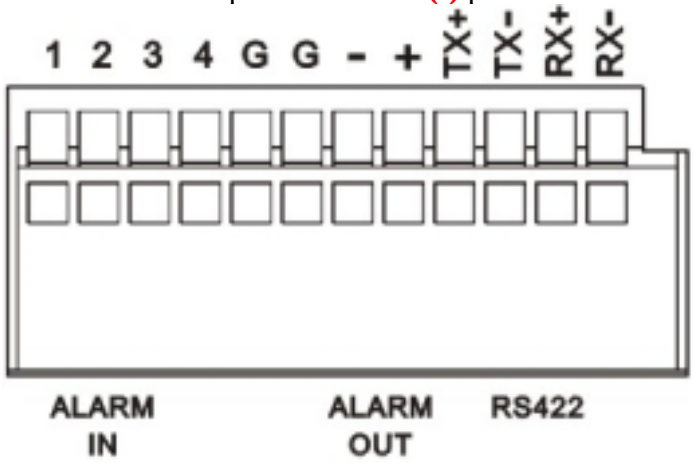
5.6.1 Alarm Input Channel

Select alarm input channel for apply record setting. Select [ALL] for apply to all channels.

5.6.2 Alarm Input Type

The alarm input attribution includes N/O. and N/C.
Each camera has one input pin on Terminal Block at the real panel.
User must use voltage output type sensor to connect alarm input interface.

Sensor device output **POSITIVE (+)** pin connect to DVR's input pin (1~4 pin)
Sensor device output **GROUND (-)** pin connect to DVR's G pin (5~6) pin



N/O.: Normally open. Sensor must constant output low level voltage. If output voltage changes from Low level to High level, DVR will be triggered.
N/C.: Normally connected. Sensor must constant output High level voltage. If output voltage changes from High level to Low level, DVR will be triggered.

Maximum high level voltage is $5V_{DC}$

5.6.3 Event Handling

The alarm triggered event handling include: record/alarm output/PTZ preset /Buzzer sound output.

Note1: if user wants to set alarm triggered record, please set the record schedule first at “Record Schedule”.

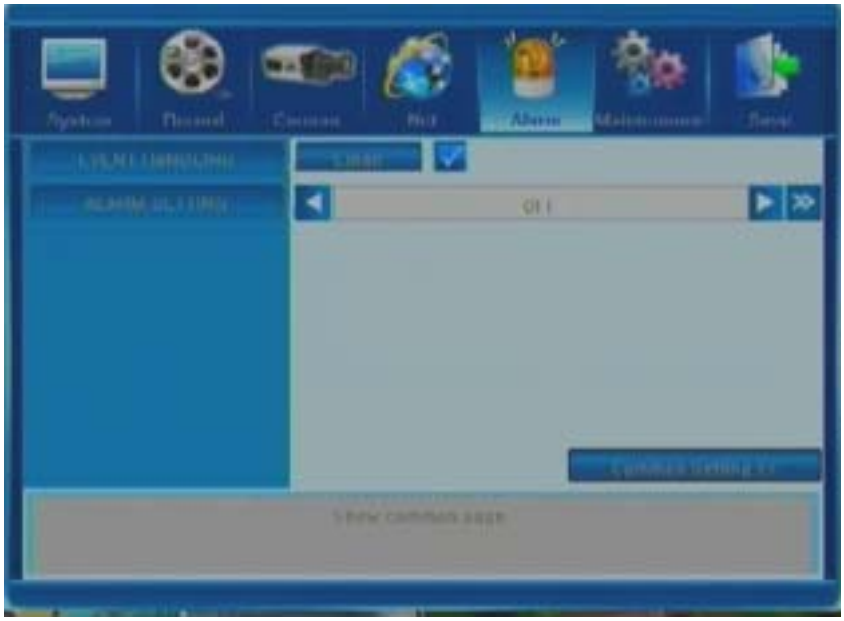
Note2: if user wants to set alarm triggered PTZ, please select the channel number first, and then to set (only preset 1 can be selected)

Note3: Event handling sound / report to alarm center need to be set in IE explorer. Please refer to Chapter 6.3

5.6.4 Alarm-Advanced (alarm schedule)

- **Alarm E-mail**

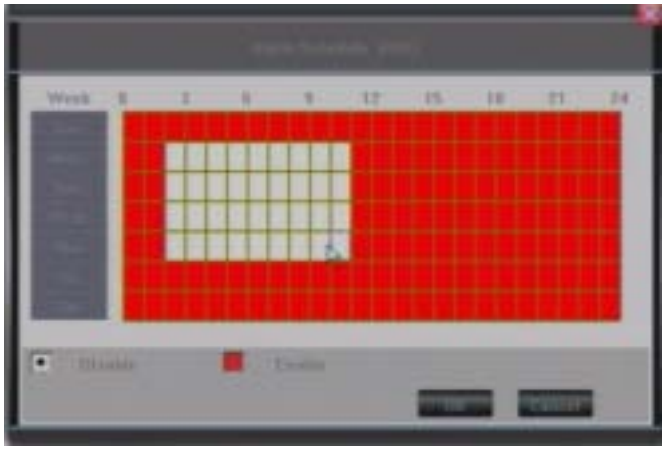
  Check “E-mail” box will enable the e-mail notification when alarm triggered.



- **Alarm E-mail**

  Click 〖>>〗 to open sub window for alarm schedule setting.

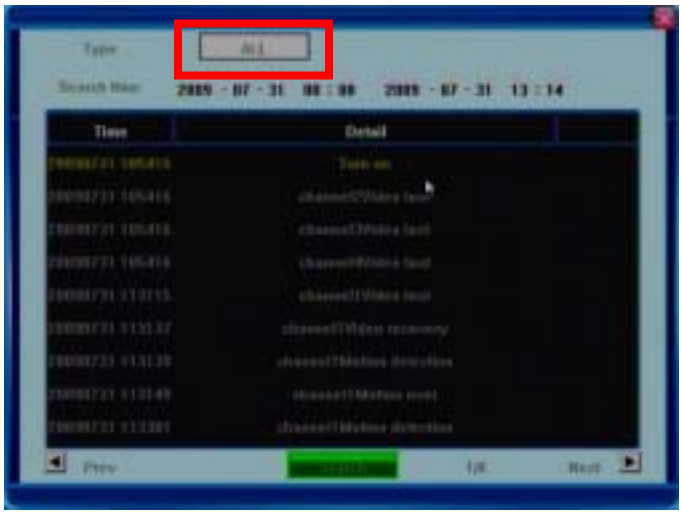
  User can enable/disable alarm output by weekly schedule.



5.7 Maintenance

5.7.1 Log View

1. Select the type of log to be searched: All/ Operation/ Exception/ Alarm.
2. Select the time scope to be searched.
3. Click Search to display the detail information of log.



Note: The maximum number of logs supported currently is 3000. The storage mode adopts overwrite mode: continuously overwrite the oldest data when the database is full.

5.7.2 Upgrade

The upgrade modes supported now are USB & IE Remote Software:

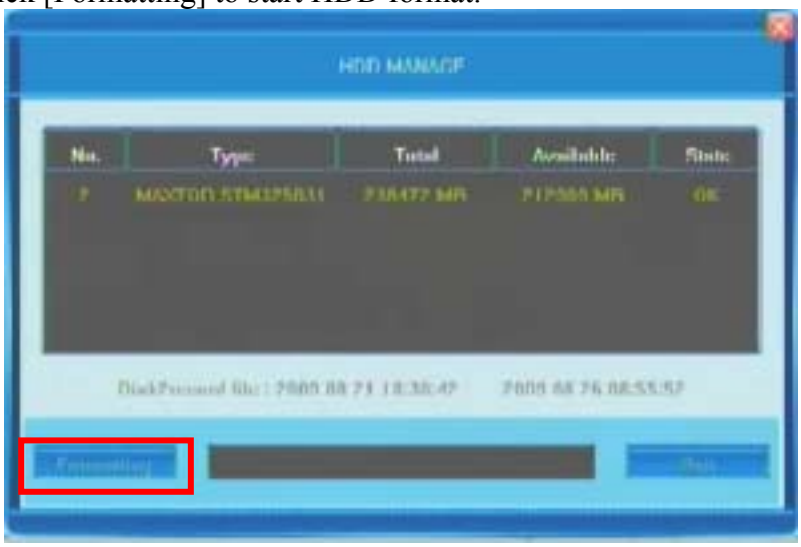
USB: Please make sure the USB device is connected correctly and the upgrade applications have already being copied into USB root directory. Please follow the prompts to operate. After accomplishing upgrade, press confirm button to restart.

5.7.3 HDD Manage

HDD must be formatted by DVR before start recording audio/video.

Click 〖>>〗 to open sub window and format the HDD by DVR.

HDD information will display on the windows if DVR detection HDD correctly. Click [Formatting] to start HDD format.



HDD information will display on the windows if DVR detection HDD correctly. Click [Formatting] to start HDD format

5.7.4 HDD Capacity

Show DVR current HDD capacity status.

5.7.5 Hardware Version

Show DVR current hardware version.

5.7.6 Software Version

Show DVR current software version.

5.7.7 Software Release Date

Show DVR current software release date.

5.8 Save Setting

5.8.1 Save & Exit

Save all setting and exit menu.

5.8.2 Exit

Exit menu without save setting.

5.8.3 Restore defaults

Reset all configuration to factory default

The system language, time, camera PAL/NTSC system, and network settings (IP address, subnet mask, gateway, HTTP port) will not be recovered by restoring to factory defaults.

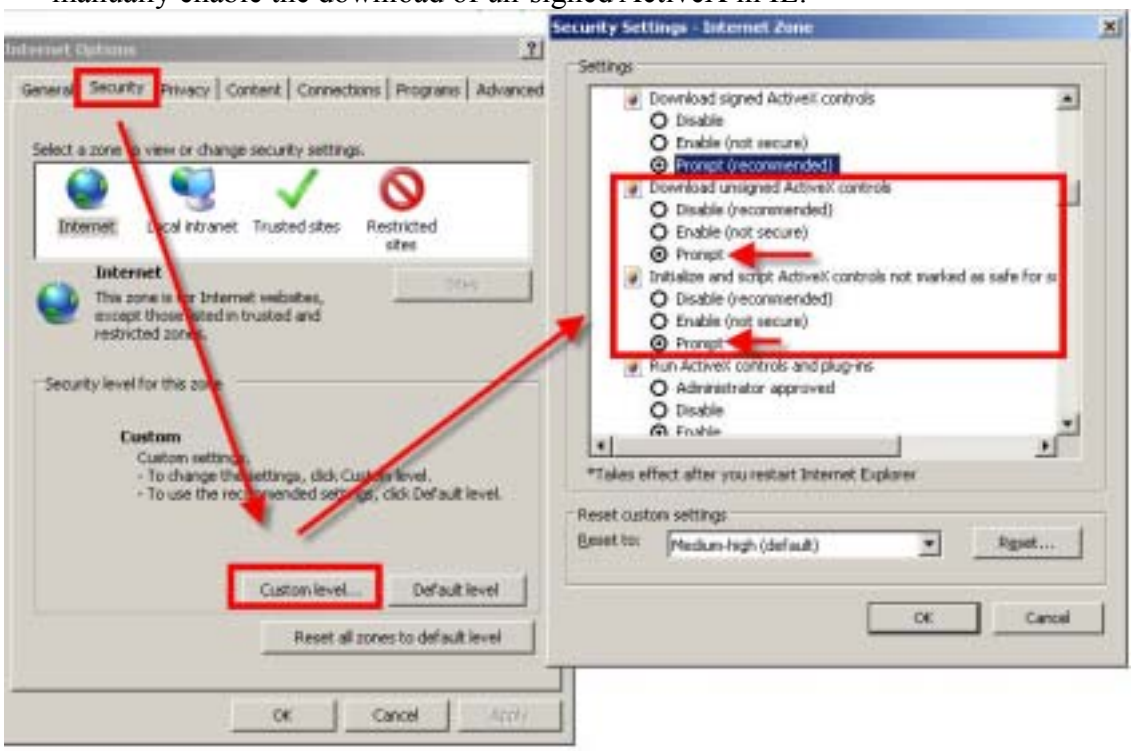
5.8.4 Logout

Save all setting and exit menu.

6. Web Browser Operation (IE Browser only)

6.1 Enable Download Un-singed ActiveX Control

User's computer need download ActiveX components for web access at the first time connect to DVR. If user's Internet explorer prohibits the download action then please manually enable the download of un-signed ActiveX in IE.

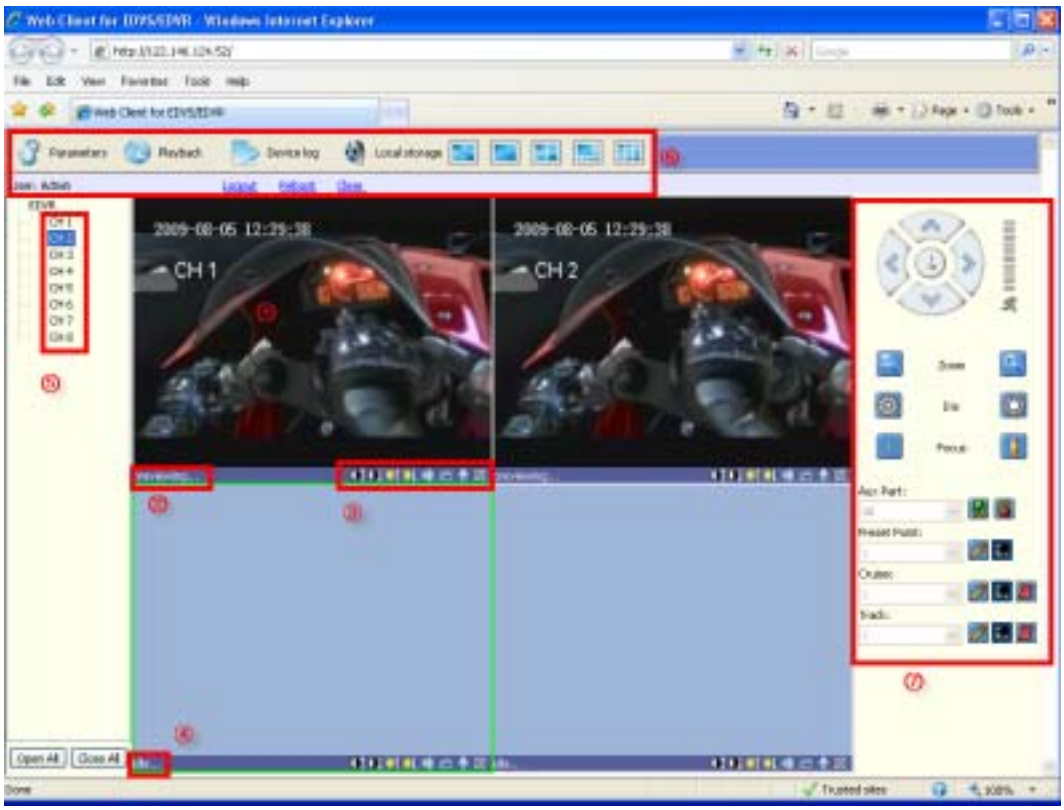


Download unsigned ActiveX controls→ Enable or Prompt
Initialized and script ActiveX controls not marked as safe → Enable or Prompt

6.2 Web Browser Main Screen

Open IE browser. Input IP address of the DVR, the Login windows will appear.

Check "Automation Open All Preview" to wathc all cameras after login.



① Camera view window , 1 camera/ 4 cameras / 8 cameras

② Camera view is previewing

③ Camera view tools

: Adjust image contrast up/down.

: Adjust brightness up/down.

: Start/stop voice monitoring. The icon will turn to green when recording.

: Start/stop recording. The icon will turn to green when recording.

: Click to snapshot.

: Stop preview.

Click

to set the storage directory of record files and pictures captured.

④ Camera view is idle.

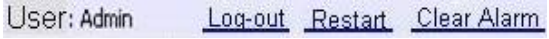
⑤ Available Camera list

⑥ Tools Bar

The description of icons from left to right is:

- Configure device parameters.
- Search and playback record files.
- View logs and export them.
- Set the storage directory of record files.

Click to switch camera view modes among full-screen, single split view mode and 4/9 splits view mode.



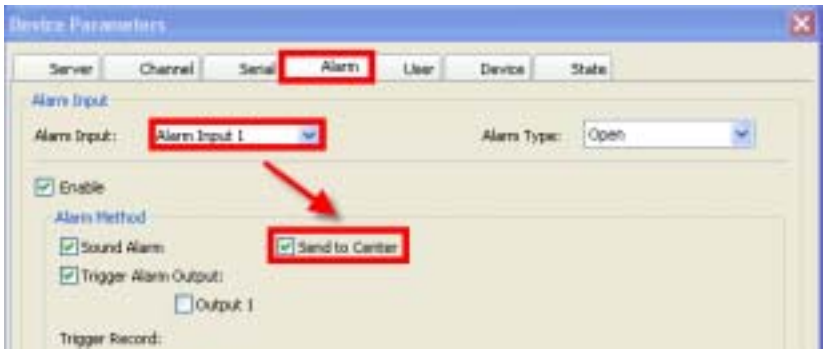
Log-out, restart device, Clear alarm

⑦ PTZ Control

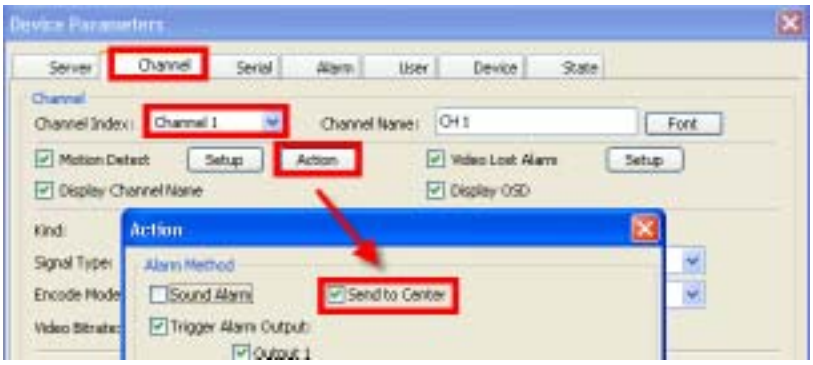
6.3 Alarm Notification

- When network connection is broken or abnormal, the alarm notification of "No heartbeat of device, please check the network!" **will be displayed in the right up side of the main screen**. After recovery of network, the preview will be displayed automatically.

- When alarms of remote notification occur, the alarm notification with alarm input number contained such as "Device alarm: IO alarm, IO input x" will be displayed in the right up side of the main screen. **Enable this function in Device Parameters setting.**



- When alarms of motion detection with remote notification occur, the alarm notification with the alarm channel number contained such as "Device alarm: motion detection, channel 1" will be displayed in the right up side of the main screen.

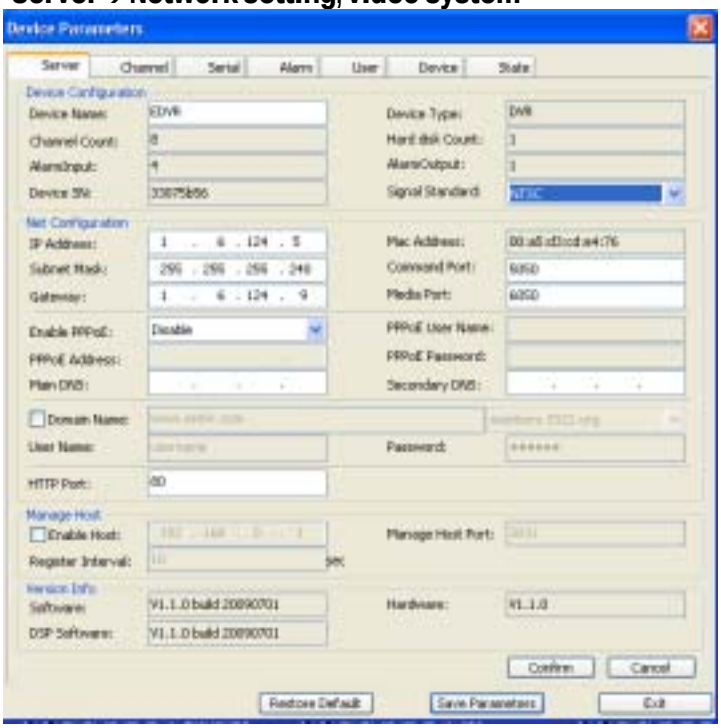


- When alarms of video loss with uploading to center occur, the alarm notification with the alarm channel number contained such as "Device alarm: video loss, channel x" will be displayed in the right up side of the main screen.

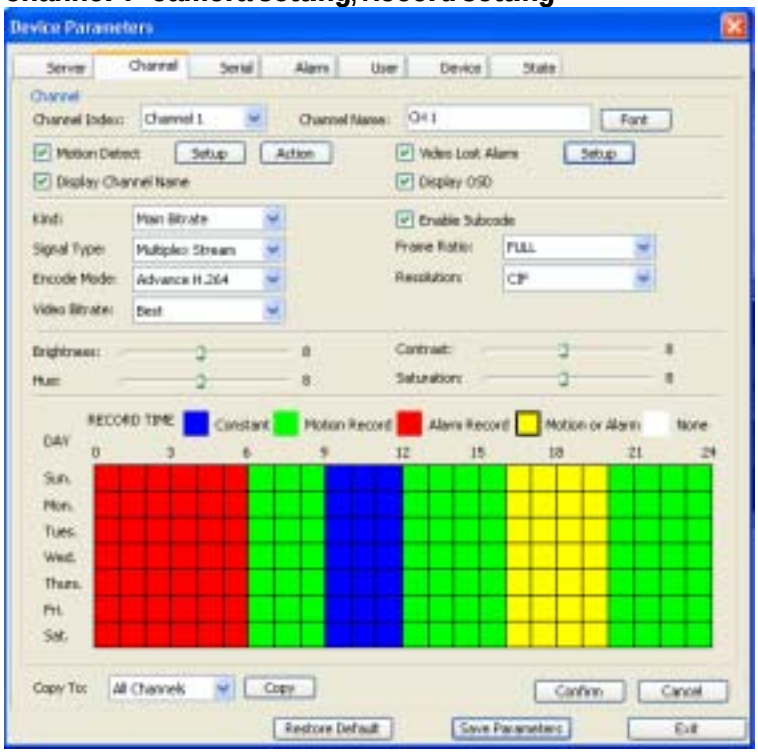
6.4 Device Parameters Settings

Please refer to Chapter 5 for DVR parameters configure.

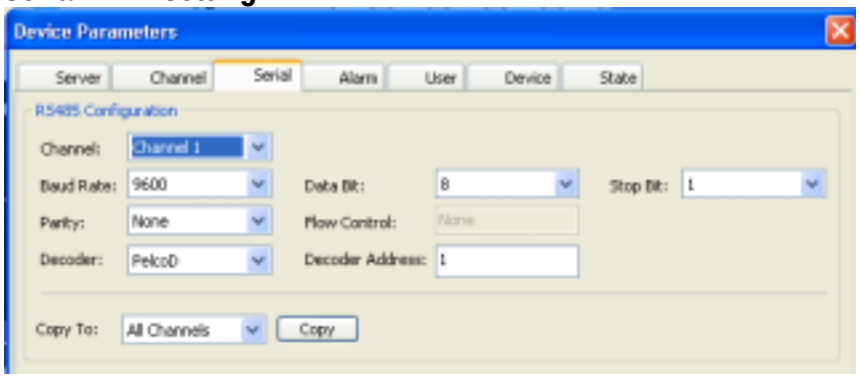
◆ **Server→Network setting, video system**



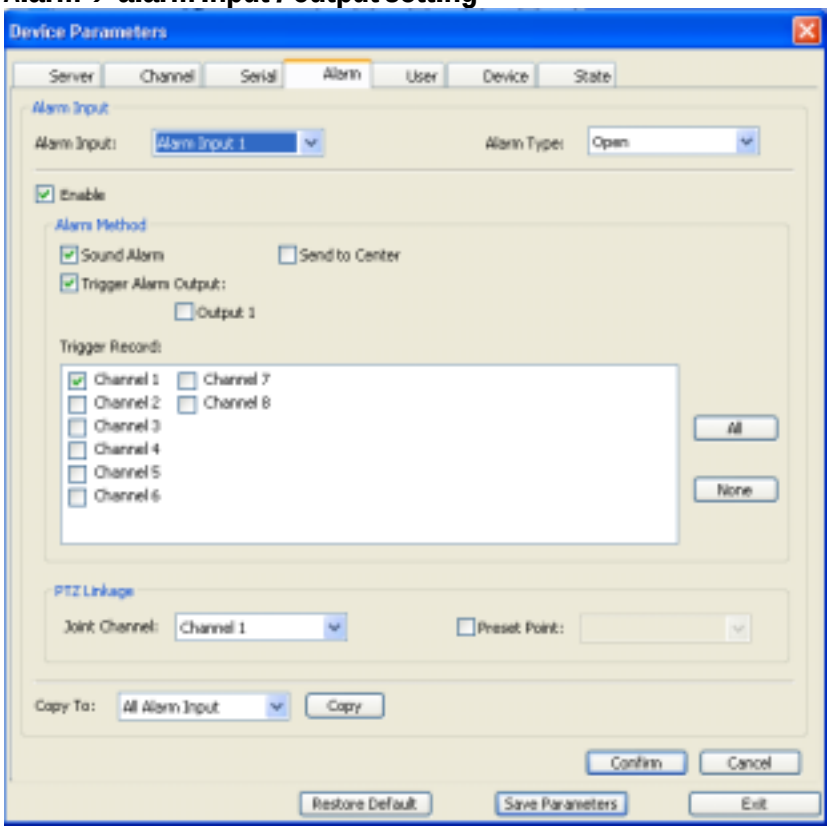
◆ **Channel→ Camera setting, Record setting**



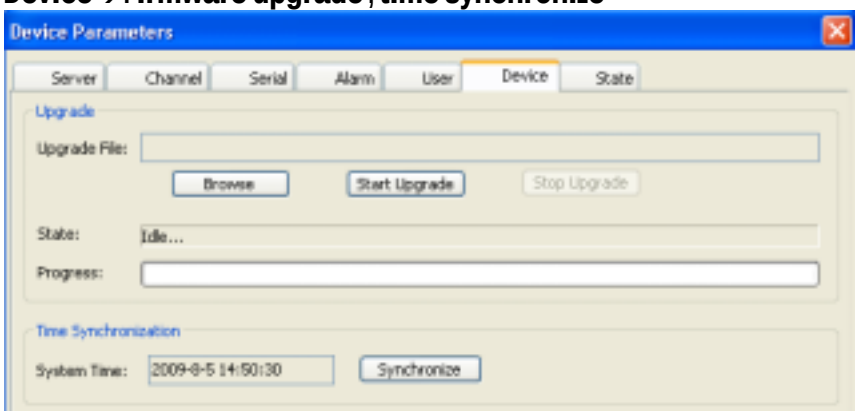
◆ **Serial→PTZ Setting**



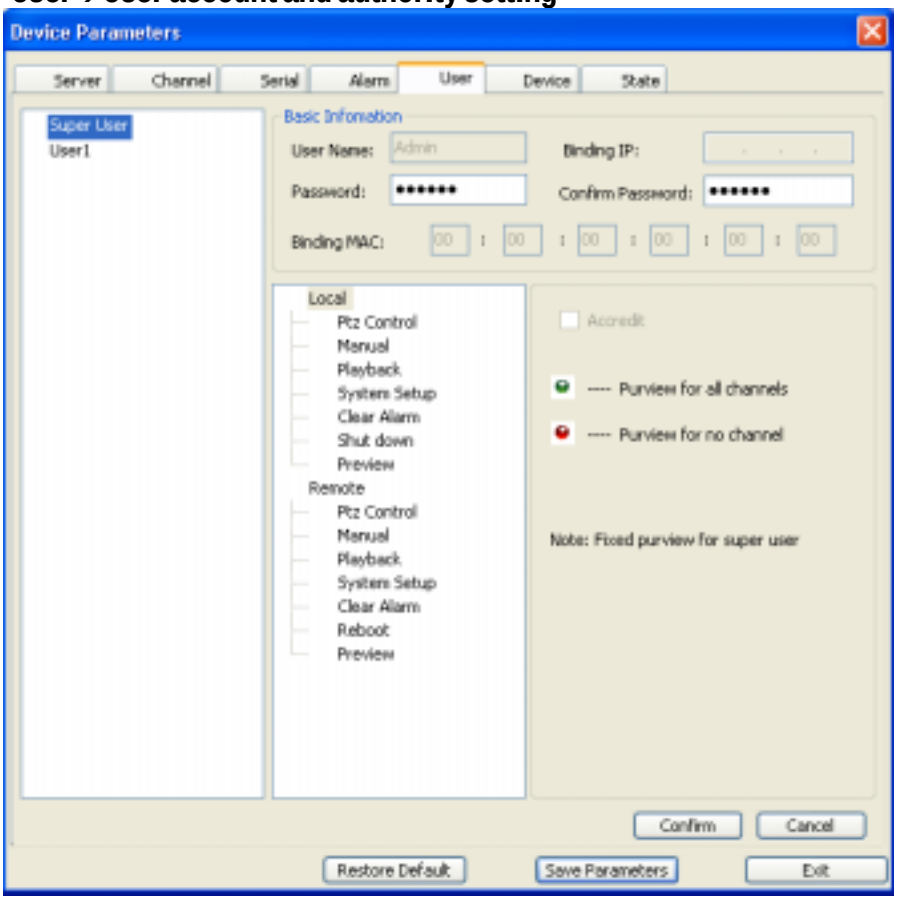
◆ **Alarm→ alarm input / output setting**



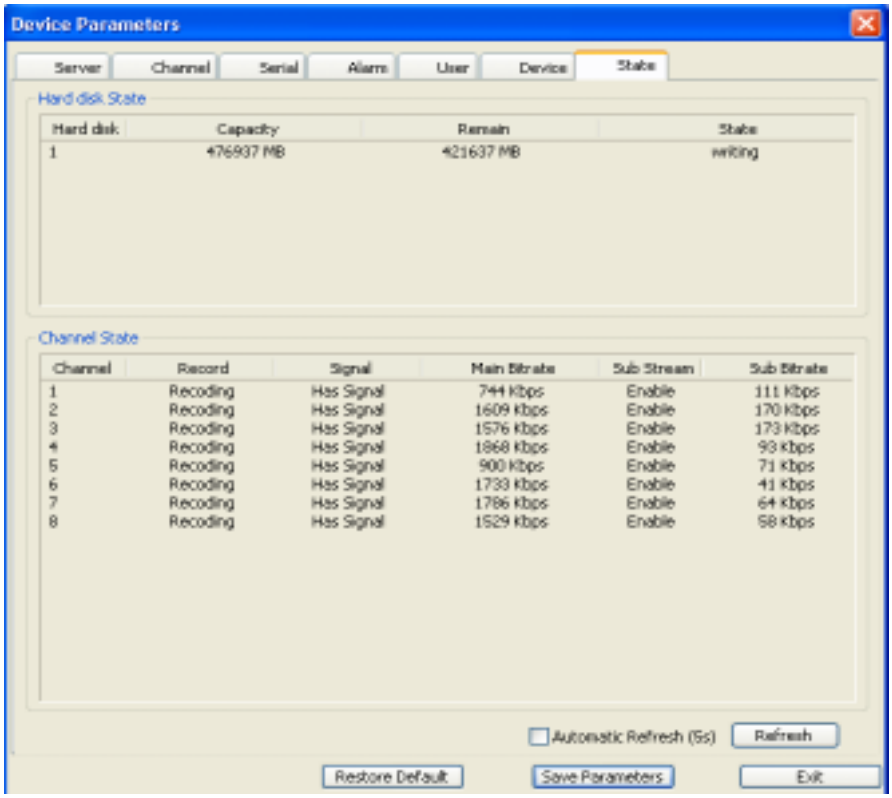
◆ **Device→Firmware upgrade , time synchronize**



◆ **User→User account and authority setting**

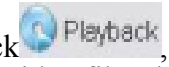


◆ State

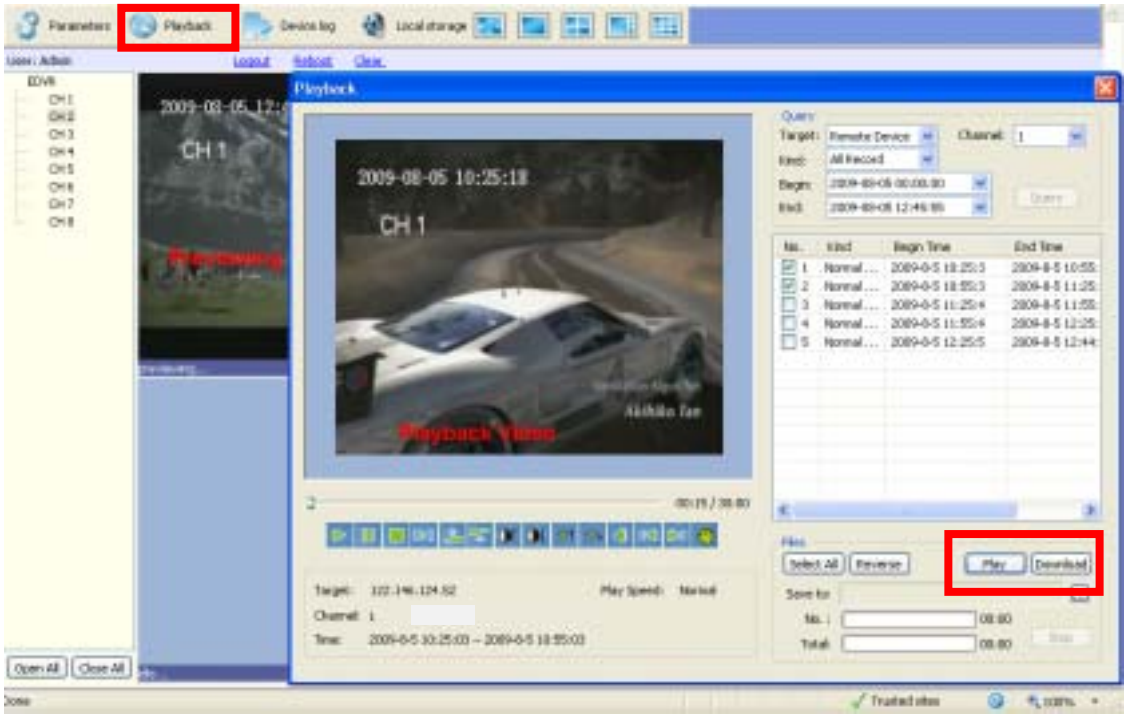

Device Parameters
Server
Channel
Serial
Alarm
User
Device
State
Hard disk State
Hard disk
Capacity
Remain
State
1
476937 MB
421637 MB
writing
Channel State
Channel
Record
Signal
Main Bitrate
Sub Stream
Sub Bitrate
1 Recoding Has Signal 744 Kbps Enable 111 Kbps
2 Recoding Has Signal 1609 Kbps Enable 170 Kbps
3 Recoding Has Signal 1576 Kbps Enable 173 Kbps
4 Recoding Has Signal 1868 Kbps Enable 93 Kbps
5 Recoding Has Signal 900 Kbps Enable 71 Kbps
6 Recoding Has Signal 1733 Kbps Enable 41 Kbps
7 Recoding Has Signal 1786 Kbps Enable 64 Kbps
8 Recoding Has Signal 1529 Kbps Enable 58 Kbps
Automatic Refresh (5s)
Refresh
Restore Default
Save Parameters
Exit

6.5 Video Files Playback & Download

6.5.1 Video Files Playback

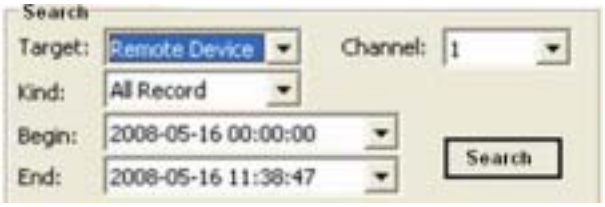
Click 

, the playback screen will appear. It includes video files search, playback and video files download.



◆ **Video Files Search**

The file search part is on the right upper side of the screen, please set target, type, start time and end time there. Then click Search to start searching. The result will list on the table. Specify the files in the table list and click on the playing control button or download button to do the relevant operations.



◆ **Video File Playback**

The play control screen is on the left side of the screen. It includes image display area, play control bar, and channel information.

Click Play, the record files selected will be displayed in time order. The progress of playing is shown as the figure below:

The playing control bar is shown as the figure below. The descriptions of all these icons from left to right are as follows:

Play; Pause; Stop; Go to next frame; **Fast play** option (The speed of playing will be doubled by each clicking. It includes: 2X, 4X, 8X, and 16X); **Slow play** option (The speed of playing will be half down by each clicking. It includes 1/2X, 1/4X, 1/8X, and 1/16X); **Enhance contrast; Reduce contrast; Enhance brightness; Reduce brightness; Open/close voice; Go to previous file; Go to next file**

(and is enabled only when multiple record files being selected to play); Snapshot （the storage directory can be set on the pop-up screen by clicking Local Storage） .

The information of the record file selected will be displayed in the area shown as the figure below. It includes device's IP address, current play speed, channel number and start/end time of the record file.

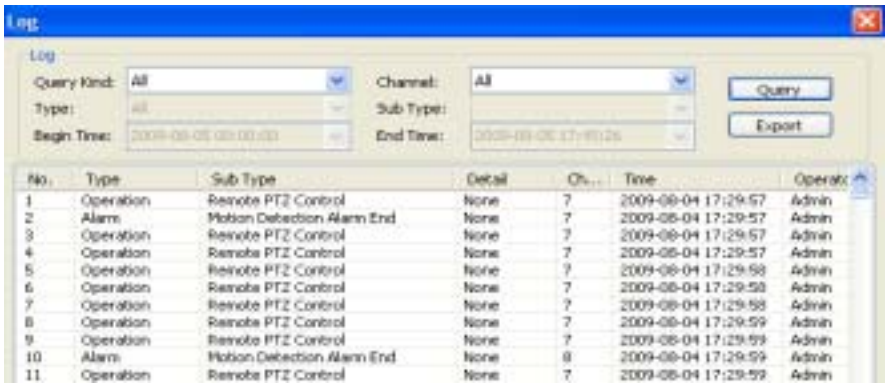
6.5.2 Download Video Files

Click ... to set the storage directory of the video file. Click Download to start downloading.

Please refer to Chapter 4.6 for playback downloaded video by Windows Media Player.

6.5.3 Device Log

Click Logs, the screen of device logs will appear. There are four options for choosing: **All, according to time, according to type, according to time and type**.
To search logs, please select the search mode and channel number needed first and then click Search to progress.
Click Export to export logs in html format.


Log
Log
Query Kind: All
Channel: All
Type:
Sub Type:
Begin Time:
End Time:
Query
Export
No. Type Sub Type Detail Ch... Time Operator
1 Operation Remote PTZ Control None 7 2009-08-04 17:29:57 Admin
2 Alarm Motion Detection Alarm End None 7 2009-08-04 17:29:57 Admin
3 Operation Remote PTZ Control None 7 2009-08-04 17:29:57 Admin
4 Operation Remote PTZ Control None 7 2009-08-04 17:29:57 Admin
5 Operation Remote PTZ Control None 7 2009-08-04 17:29:58 Admin
6 Operation Remote PTZ Control None 7 2009-08-04 17:29:58 Admin
7 Operation Remote PTZ Control None 7 2009-08-04 17:29:58 Admin
8 Operation Remote PTZ Control None 7 2009-08-04 17:29:59 Admin
9 Operation Remote PTZ Control None 7 2009-08-04 17:29:59 Admin
10 Alarm Motion Detection Alarm End None 8 2009-08-04 17:29:59 Admin
11 Operation Remote PTZ Control None 7 2009-08-04 17:29:59 Admin

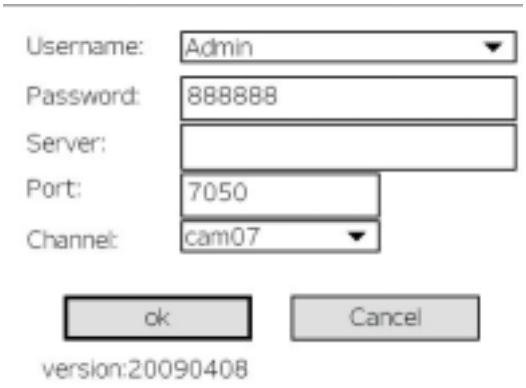
7. Mobile Phone Support

- **Windows Mobile PDA**

Open accessory CD and find the "QQEYE**.cab**" for the surveillance software.
Please refer to PDA user manual, copy *.cab into windows mobile pda
Double click on *.cab can start install software into PDA. After install completed, user can find QQEYE in the application list.

Execute QQEYE program and click setting to setup IP address of remote DVR.

Note: User's mobile phone must apply internet connection service at first, such as 3G or 3.5G service. Please contact mobile company for detail.



Username: please input〖Admin〗
Password: password
Server: IP address of DVR
Port: 7050
Click OK to save the setting.

In the main windows, click "connect" to login DVR and watch the steaming video from DVR.

At the bottom is the PTZ control and picture snapshot.

◆ **Nokia Symbian S60 3rd Phone**

Open accessory CD and find the "QQEYE**.sisx**" for surveillance software.
Please refer to user manual of mobile phone to install the software into mobile phone.

After installation competed, user can find the QQEYE icons at the application list.

Note: User's mobile phone must apply internet connection service at first, such as 3G or 3.5G service. Please contact mobile company for detail.

Execute QQEYE, First step is configuring the IP address of DVR, username, password.

Click icon to show the setup windows,

Server Address: DVR IP address
Serer Port: 7050
Username: 〖Admin〗
Password: By default are 888888
Save and return to main windows

Click▶ icon to connect DVR immediately, after login DVR successfully, user can watch the remote video from mobile phone.

switch channel, click show another 4 channel list

Control PTZ camera direction, Zoom, Focus. , Iris.

Picture Snapshot.

Exit QQEYE

Mobile phone reference list:

Nokia 5730 XpressMusic	S60 3rd_FP2	11-Mar-09
Nokia N86 8MP	S60 3rd_FP2	17-Feb-09
Nokia E55	S60 3rd_FP2	16-Feb-09
Nokia E75	S60 3rd_FP2	16-Feb-09
Nokia 6710 Navigator	S60 3rd_FP2	16-Feb-09
Nokia 6720 Classic	S60 3rd_FP2	16-Feb-09
Nokia 5630 XpressMusic	S60 3rd_FP2	10-Feb-09
Nokia E63	S60 3rd_FP1	12-Nov-08
LG-KT615	S60 3rd_FP1	30-Oct-08
Samsung I7110	S60 3rd_FP2	20-Oct-08
Nokia N79	S60 3rd_FP2	21-Aug-08
Nokia N85	S60 3rd_FP2	21-Aug-08
Samsung INNOV8	S60 3rd_FP2	25-Jul-08
Nokia E66	S60 3rd_FP1	16-Jun-08
Nokia E71	S60 3rd_FP1	16-Jun-08
Samsung SGH-L870	S60 3rd_FP2	28-May-08
Nokia 5320 XpressMusic	S60 3rd_FP2	22-Apr-08
Samsung SGH-G810	S60 3rd_FP1	11-Feb-08
Nokia 6220	S60 3rd_FP2	11-Feb-08
Nokia N78	S60 3rd_FP2	11-Feb-08
Nokia N96	S60 3rd_FP2	11-Feb-08
Nokia 6210 Navigator	S60 3rd_FP2	11-Feb-08
LG-KT610	S60 3rd_FP1	10-Feb-08
Nokia N82	S60 3rd_FP1	14-Nov-07
Samsung SGH-i560	S60 3rd_FP1	16-Oct-07
Samsung SGH-i550	S60 3rd_FP1	15-Oct-07
Samsung SGH-i450	S60 3rd_FP1	14-Oct-07
Nokia E51	S60 3rd_FP1	18-Sep-07
Nokia N95 8GB	S60 3rd_FP1	29-Aug-07
Nokia N81	S60 3rd_FP1	29-Aug-07
Nokia N81 8GB	S60 3rd_FP1	29-Aug-07
Nokia 6121	S60 3rd_FP1	18-Jun-07
Samsung SGH-i400	S60 3rd_FP1	26-Apr-07
Nokia 6120	S60 3rd_FP1	17-Apr-07
Nokia 5700	S60 3rd_FP1	29-Mar-07
Nokia N77	S60 3rd_INIT	12-Feb-07
Nokia E90	S60 3rd_FP1	11-Feb-07
Nokia E61i	S60 3rd_INIT	10-Feb-07
Nokia E65	S60 3rd_INIT	09-Feb-07
Nokia 6110 Navigator	S60 3rd_FP1	08-Feb-07
Nokia N76	S60 3rd_FP1	08-Jan-07
Nokia N93i	S60 3rd_INIT	08-Jan-07
Nokia 6290	S60 3rd_FP1	28-Nov-06
LG KS10	S60 3rd_FP1	09-Oct-06
Samsung SGH-i520	S60 3rd_FP1	09-Oct-06
Nokia N75	S60 3rd_INIT	27-Sep-06
Nokia N95	S60 3rd_FP1	26-Sep-06
Nokia E62	S60 3rd_INIT	09-Sep-06
Nokia 5500 Sport	S60 3rd_INIT	09-May-06
Nokia N93	S60 3rd_INIT	09-Apr-06
Nokia N73	S60 3rd_INIT	09-Apr-06
Nokia N92	S60 3rd_INIT	09-Nov-05
Nokia N71	S60 3rd_INIT	09-Nov-05
Nokia N80	S60 3rd_INIT	09-Nov-05
Nokia E70	S60 3rd_INIT	09-Oct-05
Nokia E61	S60 3rd_INIT	09-Oct-05
Nokia E60	S60 3rd_INIT	09-Oct-05
Nokia 3250	S60 3rd_INIT	13-Sep-05
Nokia N91	S60 3rd_INIT	14-Apr-05

8. Appendix

Appendix A-HDD Capacity Estimate

1) Calculate the maximum capacity of the build-in hard disk.

- **Timing Recording:**

  Step 1: Calculate the maximum capacity of the hard disk needed in selected channel per hour, suppose as Si (MByte) (i is the channel number), and suppose the bit rate of the channel selected as D (Kbit/s). The formula of calculation is:

  Si =（D*3600）/（8*1024）= D * 0.439453125 MB

  Step 2: Confirm the storage time length, suppose as T hours. The total maximum capacity of the hard disk needed in selected channel for T hours, suppose as St is:

  St = T * S1

  Step 3: Confirm the total numbers of the channels, suppose as n. The total maximum capacity of the hard disk needed, suppose as Sc is:

  Sc = S1 + S2 + … + Sn

- **Alarm Recording**

  Suppose the rate of alarming as α%. The capacity of the hard disk needed in alarm recording supposed as Sa is:

  Sa = Sc * α%

2) Calculate the compression bit rate for recording T hours.

- **Timing Recording**

  Step 1: Suppose the capacity of the hard disk as S, the total numbers of the channel as n. The capacity of hard disk needed per channel supposed as Di is:

  Di = S / n

  Step 2: Suppose the total recording time as T hours. The capacity of the hard disk needed per hour per channel supposed as Dt is:

  Dt = Di / T

  Step 3: The bit rate of all the channels supposed as Dc is:

  Dc = Dt *（8*1024）/ 3600 = Dt * 2.2756 （Kbit/s）

Alarm Recording

Step 1: Suppose the rate of alarming as α%, capacity of hard disk as S, the total numbers of the channel as n. The capacity of hard disk needed per channel supposed as Di is:

Di = （S / n） * α%

Step 2: Suppose the time length of recording as T (hours). The capacity of hard disk needed per hour per channel supposed as Dt is:

Dt = Di / T

Step 3: The bit rate of all channels supposed as Dc is:

Dc = Dt *（8*1024）/ 3600 = Dt * 2.2756 （Kbit/s）

Appendix B– Compatible HDD List

The other brand or model, please test by yourselves

Item	Model Number	Size(GB)	Drive
WD	WD5001ABYS	500	SATA
WD	WD5000AVVS	500	SATA
WD	WD7500AACS	750	SATA
WD	WD10EADS	1000	SATA
WD	WD15EADS	1500	SATA
WD	WD20EADS	2000	SATA
HITACHI	HDS721075KLA330	750	SATA
HITACHI	HDT721010SLA360	1000	SATA
Maxtor	6V16010	160	SATA
Seagate	ST3250310SV	250	SATA
Seagate	ST3500320SV, ST3500320AS	500	SATA
Seagate	ST31000528AS	1000	SATA
Seagate	ST31500341AS	1500	SATA
Samsung	HD161HJ	160	SATA
Samsung	HD501LJ	500	SATA

Appendix C– Compatible USB portable DVD Burner List

The other brand or model, please test by yourselves

* Sony DRX-S70U-R

* HUGE USB Slim Portable Optical Drive

* LG GE20LU10

* Lite On eSAU108

* Buffalo DVSM-P58U2/B